# THE EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAMME ON KNOWLEDGE AND ATTITUDE OF PERIMENOPAUSAL WOMEN REGARDING POSTMENOPAUSAL OSTEOPOROSIS AND ITS PREVENTION IN MARAPPADI VILLAGE AT KULASEKHARAM, KANYAKUMARI.


**A DISSERTATION SUBMITTED TO THE TAMILNADU**
**Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI,**
**IN PARTIAL FULFILMENT FOR THE**
**DEGREE OF MASTER OF**
**SCIENCE IN NURSING**
**OCTOBER 2015**

**THE EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAMME ON KNOWLEDGE AND ATTITUDE OF PERIMENOPAUSAL WOMEN REGARDING POSTMENOPAUSAL OSTEOPOROSIS AND ITS PREVENTION IN MARAPPADI VILLAGE AT KULASEKHARAM, KANYAKUMARI.**


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**INTERNAL EXAMINER** **EXTERNAL EXAMINER**

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Approved by the dissertation committee on 11.01.2014

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# BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled "A study to assess the effectiveness of video assisted teaching program on knowledge and attitude of perimenopausal women regarding post menopausal osteoporosis and its prevention in the selected areas of Marappadi, Kulasekharam, Kanyakumari district" is the bonafide work done by Shyni. V, II year M.Sc. Nursing, under the guidance of Mrs. Prabha, MSc(N), Asst. Professor, Dept. of Obstetrical and Gynaecology Nursing, SreeMookambika College of Nursing, Kulasekharam in partial fulfilment of the requirement for the degree of Master of Science in Nursing under the Tamilnadu Dr. M.G.R. Medical University, Chennai.

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Date: 10.08.2015 Sree Mookambika College of Nursing.

# CERTIFICATE

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# DECLARATION

I hereby declare that the present dissertation titled "A study to assess the effectiveness of video assisted teaching program on knowledge and attitude of perimenopausal women regarding post menopausal osteoporosis and its prevention in the selected areas of Marappadi, Kulasekharam, Kanyakumari district" is the outcome of the original research work undertaken and carried out by me under the guidance of Mrs. Prabha, MSc(N), Asst. Professor, Dept. of Obstetrical and Gynaecology Nursing, Sree Mookambika College of Nursing, Kulasekharam. I also declare that the material of this has not formed in any way, the basis for the award of any degree or diploma in this university or any other universities.

Place: Kulasekharam **Mrs. Shyni. V**

Date: 10.08.2015 M.Sc. Nursing,, II year

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**INVESTIGATOR**

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## ABSTRACT

Osteoporosis occurred among elderly people and postmenopausal women. Low-estrogen has no effect on osteoporosis prevention. However, adequate diet and lifestyle can help to prevent osteoporosis from young age. It is important to store bone mass while the menstrual periods continue. Furthermore osteoporosis is not usually found until a bone has fractured so that many women are unaware that they are at risk of osteoporosis. (Curry & Hogstel 2002, 26.) The main objective of the study was to assess the effectiveness of video assisted teaching programme on assisted reproductive techniques among infertile women. The research design selected for the study was pre experimental one group pretest and posttest design. A purposive sampling technique was followed to obtain a sample of 50 perimenopausal woemn. During the data collection, a pretest was conducted on the first day, followed by video assisted teaching programme on osteoporosis and its prevention was given. Finally, posttest was done on the seventh day for the same perimenopausal women. Data were analyzed by descriptive and inferential statistics. The data were analyzed using both descriptive and inferential statistics. The pretests mean knowledge score was 9.32; the posttests mean knowledge score was 16.68. 't' test was used to evaluate the effectiveness of the video assisted teaching programme at 0.05 level of significance.the pretest mean attitude score was 9.18 and post testmean attitude escore was 17.48. It was found that the 't' test value was statistically significant at $p<0.05$ level (Table value=2.009). The study reveals that the level of knowledge and attitude among perimenopausal women has improved after video assisted teaching programme at 0.05 level of significance. Knowledge on osteoporosis and its prevention helps them to take preventive measures to get the risk of osteoporosis.Based on the findings this study concludes that teaching programme like video teaching will improve the knowledge on osteoporosis and its prevention among perimenopausal women.



Key words: Video assisted Teaching programme, perimenopause, post menopause, Osteoporosis.

# CHAPTER I

## Introduction

"As you sow, so shall you reap"

"First we form habits then they form us"

Bone begins to form long before birth, ossification is the process by which the bone matrix (collagen fibers & ground substance) is formed &hardening minerals (eg. Calcium salts) are deposited on the collagen fibers. The collages fibers give tensile strength to the bone and the calcium provides compressional strength. The important regulating factors that determine the balance between bone formation and bone resorption include local stress, Calcium, Vitamin-D, parathyroid hormone, oestrogen hormone and calcitonin. Metabolic bone diseases results from a disruption in the normal process of bone formation, mineralization and remodeling. Bone metabolism is regulated by bone cells which respond to a variety of hormonal and chemical factors.

Local stress (weight bearing) acts to stimulate bone formation and remodeling. Weight bearing bones are thick and strong. Without weight bearing or stress as in prolonged bed rest, the bone loses calcium (resorption) and becomes osteopenic and the weak bone may fracture easily. Osteoporosis is a progressive systemic skeletal disease characterized by reduced bone mass/density and micro-architectural deterioration of bone tissue.

Osteoporosis is a disease in which the density and quality of bone are reduced, leading to weakness of the skeleton and increased risk of fracture, particularly of the spine, wrist and hip. Osteoporosis and associated fractures are an important cause of mortality and morbidity in elderly and oldage. Osteoporosis is

often known as “the silent thief” because bone loss occurs without symptoms and the progressive loss and thinning of bone tissue happens over many years. This disease affects millions of people throughout the world and women are four times more likely than men to develop the disease than men.

Osteoporosis is a disease in which bones become fragile and weak, leading to increased risk of fractures. This condition is more common in old age. Osteoporosis has no signs and symptoms until a fracture occurs- so that it is called a silent disease. (Susan A Krum, Nightingale Nursing Times, vol.9, oct.2013)

The bones are in a constant state of renewal. New bone is made and old bone is broken down. When a person is young, the body makes new bone faster than it breaks down the old bone and thus the bone mass increases. Most people reach their peak bone mass by their early 20s to 30s and remain stable till 50- 60 years. As people age, bone mass is lost faster than it's created. Thus causing a depletion in the bone mass. How likely a person develops osteoporosis depends partly on how much bone mass one attained in his/her youth. The higher one’s peak bone mass, the more bone the person have "in the bank" and less likely the person develop osteoporosis as they age. People who are physically active are less at risk of developing osteoporosis, as their bones are stronger and less likely to lose strength with age. (Gonzalez Matarin, Amat et al. 2013)

Osteoporosis is a metabolic disease which is commonly seen in elderly women. Osteoporosis accounts for 500,000 vertebral fractures and 300,000 hip fractures yearly, and hip fractures are expected to increase by 10,000 to 20,000 over the next decade (Culleton, 1987). In addition to economic costs, these fractures

cause osteoporosis sufferers considerable pain, disability, loss of independence and in many cases premature death.( Gustavo A Miranda, EMBO J. Feb 6, 2012)

Osteoporosis can be classified in two types. Type I, postmenopausal osteoporosis, is presumed to be caused by a reduction in estrogen which occurs at menopause, affecting primarily trabecular bone, and results in vertebral and Colles' fractures. Type II, senile osteoporosis, occurs in the very elderly as a result of impaired bone formation and increased bone resorption connected with reduced calcium absorption. It causes hip and humerus fractures involving both the cortical and trabecular bone, and occurs primarily in females. Males are affected but to a lesser degree than females. (Peck, 1990).

Osteoporosis is a complex multifactorial disease with chronic demineralization of calcium from bone. Risk factors include genetic predisposition, low body weight, sedentary lifestyle, smoking, age, gender, and menopause. Two risk factors that can be managed by the older osteoporotic are adequate calcium intake and regular exercise. (Coralli Raisz & Wood, 1986)

Dietary habits are primarily socially learned. Therefore it is important to examine issues that produce insight to individuals' willingness and perception of ability to change nutrition behaviours. There remains a widespread belief that elderly women in their 60s and 70s are too old or disabled to benefit from preventive health care. Yet adoption of a healthy lifestyle by individuals at any age could contribute to a better old age. Effective preventive health practices for the elderly require a broad commitment from health care providers, the elderly themselves, their families, and private and public health systems (Aloia, 1988).

Postmenopausal women are at high risk of developing osteoporosis and resulting fractures on account of rapid bone loss due to lack of oestrogen which occurs with onset of menopause. Bone mass peaks in the mid twenties and thirties, and remains relatively stable until the beginning of the menopause. Everyday the skeleton undergoes formation and breakdown; however, a woman become estrogen deficient when menses cease and bone breakdown begins to exceed bone formation. Thus the peak bone density reduces the osteoporosis risks later in life. So it is sensible to pay more attention to those factors affecting peak bone mass. It is estimated that worldwide, osteoporotic fracture occurs every 3 seconds. One in three women at the age of 50 will suffer a hip fracture due to osteoporosis in their remaining life times. (Wendy Dawn, 2014).

**Need and significance of the study**

As the people age, their bones become very weak and fragile, a condition called osteoporosis. Fortunately, there are many things the people of all stages of life can do to build strong healthy bones. The amount of bone mass obtain while you are young determines the skeletal health for rest of your life. Bone is a hard tissue, being built up by bone-forming cell called osteoblasts while also being broken down by the cells known as osteoclasts. During childhood and adolescence, bone formation is dominant, bone length and girth increase with age, ending at early adulthood when peak bone mass is attained. Females tend to maintain peak mineral content until menopause, after which time its declines about 15% per decade.

Worldwide, an osteoporotic fracture is estimated to occur every 3 second. Osteoporosis is estimated to affect 200 million women worldwide approximately

one-fifth of women aged 70, two fifth of women aged 80 and two-thirds of women aged 90 are estimated to affected by osteoporosis fracture.

Osteoporosis affects an estimated 75 million people in Europe, USA and Japan for the year 2010, there were an estimated 9 million new osteoporotic fractures of which 1-6 million were having fracture at the hip, 1.7 million were having fracture at the forearm and 1.4 million were having clinical vertebral fractures. 1 in 3 women over 50 will experience osteoporotic fracture at 80%, 75%, 70% and 58% in the forearm, humerus, hip and spine fractures respectively. Between 1990 and 2010, there was nearly a 25% increases in hip fractures. By 2050, the worldwide incidence of hip fracture is projected to increase by 240% in women and 310% in men. The estimated number of hip fractures worldwide will rise from 1.66 million in 1990 to 6.26 million in 2050. India with a population of 1.2 billion people constitutes more than100 million people aged over 50 years. In India 50 million people are either osteoporotic or have low bone mass. 52% and 29% of women suffers with osteopenia and osteoporosis respectively among women aged 30-60 years. (IOF Asian Audit report, 2014).

Menopause is characterized by the loss of estrogen production by the ovaries. This may occur by natural means or by the surgical removal of both ovaries. This loss of estrogen accelerates bone loss for a period ranging from 5 to 8 years. In terms of bone remodeling, the lack of estrogen enhances the ability of osteoclasts to absorb bone. Since the osteoblasts (the cells which produce bone) are not encouraged to lay down more bone, the osteoclasts win and more bone is lost than is produced. So postmenopausal women are at high risk for developing osteoporosis. The factors such as oestrogen deficiency, reduced intestinal calcium absorption, loss

of bone protective hormones have a negative effect on bone health. (George Krucik, Feb 2012)

The increasing burden of osteoporotic fractures urgently requires effective preventive strategies aimed at maximizing peak bone density, preventing excessive bone loss and reducing the risk of falls. World osteoporosis day is observed annually on 20th October, which marks the launch of a year- long campaign dedicated to global awareness of the prevention, diagnosis and treatment of osteoporosis. The theme of the osteoporosis day 2014 is "strong bone for healthy life" indicates the importance of bone health.(Sobiya N Mogul, 2013)

Level of awareness about osteoporosis: Awareness of osteoporosis is low in India with a number of small scale surveys, indicating that in the urban population, approximately only 10-15% are familiar with the disease. The survey reveals that Indians obtained information about osteoporosis is mostly through the television and radio (55%). Unfortunately the information from the media is not always accurate, so there is a clear need for increased involvement of professionals in educating the population about osteoporosis. (Report from Government of India: Ministry of Home Affairs 2011, Office of the Registrar General & Census Commissioner, India).

Lyles K W, et al. (2010) conducted a descriptive study on life style factors for promoting bone health in osteoporosis among 320 women aged 45-55 years were selected. Data were collected by postal questionnaire and through telephone interviews. The results of the study showed that, 92.5 percent of women were non-smoker, had no alcohol problems and participants in regular weight bearing

exercises, and 21.1per cent women changed their diet such as including more calcium rich diet, following identification of risk of osteoporosis.

Delmas PD, et al. (2012) conducted a descriptive survey to assess the women's knowledge and practices regarding the treatment and prevention of osteoporosis at Canada, through convenient sampling method consisting of 185 women aged 50-60 years. Measures of knowledge and practices were obtained by using a hand delivered questionnaire. The results of the study showed that 74% women possessed inadequate information about osteoporosis, possessed limited knowledge about the disease and were not taking adequate measures to prevent or treat osteoporosis as they age.

A study involving more than 3500 subjects carried out at at a tertiary care center in south India using the ICMRD (ICMR Database ) in the diagnosis of osteoporosis reported that a greater proportion were diagnosed as having osteoporosis at the spine and at the hip with a percentage of 42.7% and 11.4% respectively.(2013-aiaa pacific audit-iof. Bone health.org)

Hence the investigator feel the need to assess the knowledge of perimenopausal women related to osteoporosis, which will be helpful to enhance the health related knowledge of public in general, in preventing osteoporosis and helps to lead a healthy old age free from fracture. Hence this study is undertaken.

**Statement of the problem**

A study to assess the effectiveness of video assisted teaching programme on knowledge and attitude of perimenopausal women regarding postmenopausal osteoporosis and its prevention in Marappadi Village at Kulasekharam, Kanyakumari.

**Objectives of the study**

1. To assess the knowledge of perimenopausal women regarding Osteoporosis and its prevention
2. To assess the attitude of perimenopausal women regarding Osteoporosis and its prevention.
3. To evaluate the effectiveness of video assisted teaching on the knowledge and attitude on osteoporosis and its prevention among perimenopausal women after the video assisted teaching programme.
4. To determine the association between the knowledge of perimenopausal women regarding Osteoporosis and their selected socio-demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.
5. To determine the association between the attitude of perimenopausal women regarding Osteoporosis and their selected socio-demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

**Hypotheses**

All hypotheses will be tested at 0.05 level.

$H_1$: There is significant increase in the post test knowledge score of the perimenopausalwomen regarding osteoporosis and its prevention after video assisted teaching programme.

$H_2$: There is a significant difference in the attitude of the women regarding osteoporosis and its prevention after the video assisted teaching programme.

$H_3$: There is a significant association between the pretest knowledge regarding osteoporosis and its prevention and the selected socio-demographic variables such as age, education, occupation, marital status, dietary habits, lifestyle, monthly family income and period of exposure to sunlight.

$H_4$: There is a significant association between the pretest attitude regarding osteoporosis and its prevention and the selected socio-demographic variables such as age, education, occupation, marital status, dietary habits, lifestyle, monthly family income and period of exposure to sunlight.

## Operational definitions

### Effectiveness

In this study it refers to the expected and desired changes in knowledge and attitude regarding osteoporosis and its prevention among those attended the video assisted teaching programme.

### Knowledge

In this study, knowledge refers to the awareness about the risks of getting osteoporosis and how to prevent it.

### Attitude

It refers to ones opinion or feeling towards post menopausal osteoporosis and its prevention.

### Perimenopausal period

Perimenopausal period is the stage of a woman's reproductive life that begins 3-10 years before menopause, when the ovaries gradually begin to produce less oestrogen.

**Perimenopausal women**

Perimenopausal women are those women who belongs to the perimenopausal period.(30-45 years of age).

**Menopause**

The span of life in women, during which the menstrual cycle wanes and gradually stops. Menopause usually occurs between 45 and 50 years of age.

**Post menopause**

The period of life in women after menopause.

**Osteoporosis**

Osteoporosis is a systematic skeletal disorder characterized by compromised bone strength pre-disposing to an increased risk of fracture mainly affecting the post menopausal women.

**Prevention**

Prevention refers to the measure that should be taken against the occurrence of osteoporosis.

**Assumptions**

1. The women who are in perimenopausal stage are not much aware of the risk of post menopausal osteoporosis.
2. Attitude of perimenopausal women differs from one person to another.
3. Knowledge vary from one women to another.

4. Women are needed to be educated to make them aware about postmenopausal osteoporosis.
5. The video assisted teaching may improve the knowledge level of women and changes the attitude regarding osteoporosis and its prevention.

**Delimitations**

1. The study was limited to perimenopausal women residing in Arumanai (Marappadi) only.
2. The study was conducted only with 50 perimenopausal women
3. The study was conducted for a period of 4 week only
4. The women who understand Tamil can only be able to participate in the study.

**Ethical consideration**

The study was conducted after getting approval from the dissertation committee of Sree Mookambika Institute of Medical Sciences and written consent to conduct the study is obtained from the Director of Sree Mookambika Institute of Medical Sciences, Kulasekharam. The study was conducted in Marappadi after getting approval from the Arumanai Panchayat President. Informed written consent was obtained from the study samples by explaining the need and significance of the study. Assurance of confidentiality was given to the subject.

**Conceptual framework**

The conceptual frame work for this study was derived from "J.W. Kenny's Open System Model". All living systems are open system in which there is a continual exchange of matter, energy and information provides input for the system. The system transforms the input in the process is known as through put. The energy

of information is given off in to the environment as output. When output is reformed in to the system as input, the process is known as feedback.

All living systems are open system in which there is a continual exchange of matter, energy and information with the environment from which the system receives input and gives back output in the form of matter, energy, information. An open system depends on the quality and quantity of the input, through put, output and feedback.

**Input**

In this study, input consists of information, material or energy that enters the system. Input is assessed by knowledge and attitude of perimenopausal women regarding osteoporosis and its prevention.. Pretest was conducted with the help of structured questionnaires and attitude scale regarding osteoporosis and its prevention.

**Throughput**

In this study through put refers to process after the input absorbed by the system in a way useful to the system. This transformation is called throughput. Through put was the transformation process which is obtained by delivery of Video Assisted Teaching Programme. Throughput is assessed through the posttest score.

**Output**

Output refers to the energy, matter or information given out by the system as a result of its processes. In this study output refers to the change in the level of knowledge and attitude regarding osteoporosis and its prevention among perimenopausal women.

**Feedback**

In this study feedback refers to the mechanism by which some of the output of a system is returned to the system as input.

1. Negative feedback inhibits change.
2. Positive feedback stimulates change.

This Study is aimed to evaluate the Effectiveness of Video Assisted Teaching Programme on improving the level of knowledge and attitude regarding osteoporosis and its prevention among perimenopausal women.

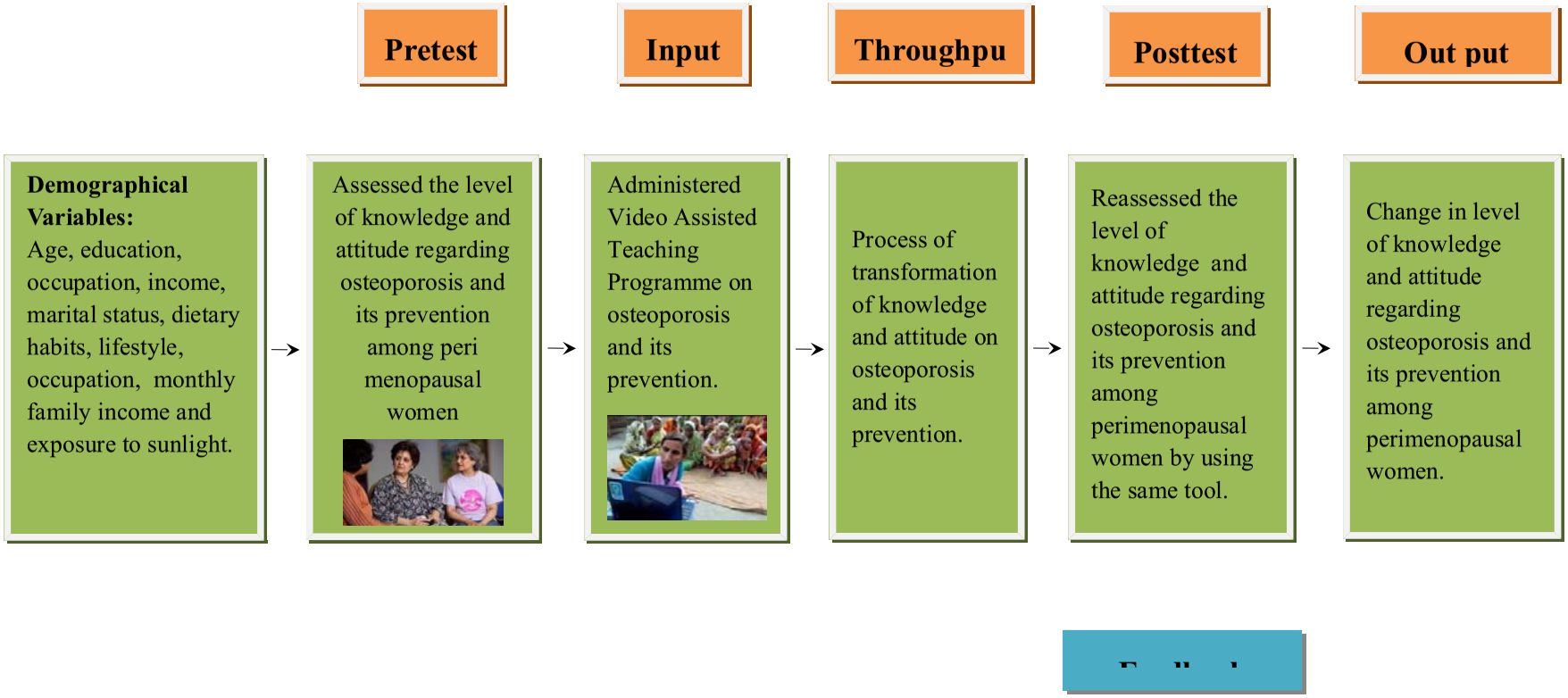


*Fig 1.* Conceptual frame work based on modified J.W. Kenny's open system model

**Fig.1 - Conceptual frame work Based on modified J.W.Kenny's Open System Model**

# CHAPTER II

## Review Of Literature

Review of literature is very essential for every investigator to update the information about the literature related to his/her own problem already done by others. Review of literature is considered as the most important pre-requisite to actual planning and conduct of the study (Sharma S.K, 1990).

Review of literature helps the research to build on existing work he or she should understand what is already known as topic. (Polit and Beck, 2008)**.**

This chapter deals with a review of published and unpublished research studies and related material for the present study.

For this study, reviewed the related literature and organized under the following broad headings.

1. Studies related to osteoporosis
2. Studies related to other interventions on knowledge and attitude of osteoporosis and its prevention.
3. Studies related to effectiveness of video assisted teaching programmes on knowledge and attitude of osteoporosis.

**1. Studies related to osteoporosis**

Barnes and Thomas (2001) conducted a cross-sectional study in Department of biochemistry, SDM college of medical science and hospital, Karnataka, regarding hospital based preliminary study on osteoporosis in postmenopausal women. The study was done to evaluate whether the awareness of osteoporosis has grown

worldwide in recent years and to assess that osteoporotic fractures are a common cause of morbidity and mortality in adult Indian women. The sample were 150 pre- and post-menopausal women consisted of 75 Pre-menopausal women in the age group of 25-45 years and 75 postmenopausal women in the age group of 46-65 years. The researchers compared, bone formation markers (Total Calcium, Ionised calcium, Phosphorus, Alkaline phosphatase), and bone resorption markers(Urinary Hydroxyproline) were analysed in pre and post-menopausal women. The results from this study suggest that bone formation markers and bone resorption markers has a 72% link for the development of Osteoporosis. Simple, easy, common biochemical markers can still be used to assess the bone turnover in postmenopausal women and hence their risk of developing osteoporosis and fractures

Bergman and Werner (2012), conducted a cross sectional study to assess the prevalence of complementary and Alternative medicine, in Canada. The samples included 360 osteoporosis clinic patients in Canada. The method used for data collection is a self administered questionnaire on Complementary and Alternative Medicine use. The study result showed that utilization of complementary and alternative medicine supplements could possibly increase 1%-5% bone density among 63% samples and decreasing the level of co-morbidity and fracture history among osteoporosis patients to 12%. The study concluded that, CAM is effective to increase the bone density and decrease the level of co-morbidity and fracture history among osteoporosis patients.

Boyrd et al. (2010) conducted a cohort study to assess the variations in bone mineral density values among 146 women (35-45yrs)in Brazil. The study results showed that about three quarters of the sample had normal bone mineral density

values, 22.61% has osteopenia and 2.73% had osteoporosis. The study concluded women needed that interventions regarding osteoporosis before the age of 45years.

Brigham (2014), conducted a study in Women's Hospital, USA. The objective of the study was to assess older adults' knowledge and beliefs regarding osteoporosis and its prevention, in order to develop effective osteoporosis health education messages and materials. The sample were 15 older adult volunteers. The tool used were semi structured one-on-one interviews, a standard interview guide was developed and used for all interviews, which were audio taped and transcribed. The result found that the term "osteoporosis" was well recognized, but many participants had only a fragmented understanding of its meaning. All participants identified osteoporosis as a serious condition, but many did not perceive themselves to be at personal risk for developing the condition. The study concluded that Osteoporosis awareness is high, but the older adults who were interviewed had an incomplete understanding of the condition and the knowledge and beliefs were unaffected by age, socio economic status, gender. This could hinder efforts to improve prevention and treatment of osteoporosis.

Champion and Concral, (2010), conducted a study in Cambridge, to find out perimenopausal women’s views on taking hormone replacement therapy to prevent osteoporosis. A semi structured postal questionnaire survey were used in this study. The study result showed that more than three quarters of the respondents 65% were interested in taking hormone replacement therapy to prevent osteoporosis but 48% of them would have liked further information whereas 64% women thought that it was very important to prevent osteoporosis. The study concluded that there is

considerable interest among perimenopausal women in taking hormone replacement therapy to prevent osteoporosis.

Davidhizar et al. (2012) conducted a study in Department of Obstetrics and Gynaecology, Gov. Medical College, Jammu and Kashmir regarding Preliminary screening of osteoporosis and osteopenia in urban women from Jammu. The objective of the study was to assess the substantial morbidity and socio-economic burden of osteoporosis. The tool used were T-scores utilizing calcaneal QUS. The sample were 158 women who were admitted in the hospital. The result suggested that a substantial female population had osteopenia and osteoporosis after the age of 45 years. The incidence of osteoporosis was (20.25%) and osteopenia (36.79%) with maximum number of both osteoporosis and osteopenia women recorded in the age group of (55-64 years). After the age of 65 years, there was an almost 100% incidence of either osteopenia or osteoporosis, indicating that it increases with age and in postmenopausal period. The study concluded that religion, caste and diet had an influence on the outcome of osteopenia and osteoporosis score in present study, but still it has to be substantiated by conducting larger randomized clinical trials in future.

Diaz-Correa et al, (2014) conducted a cross sectional study on Osteoporosis knowledge in samples with a first fragility fracture in the hospitals of Puerto Rico, to determine the level of knowledge about osteoporosis and factors associated with low level of knowledge in patients with a first osteoporotic fracture. The study was conducted on 54 samples. A validated questionnaire was used to assess subjects' level of knowledge about osteoporosis. Differences between study groups were evaluated using chi-square and Student's t tests, as appropriate. Overall, 61.1% of

the participants had a low level of knowledge about osteoporosis. In this population, for the samples with a first osteoporotic fracture, the majority had a low level of knowledge about osteoporosis. Low knowledge was associated with low socio-economic status, lack of counseling about osteoporosis, prior BMD measurement, and osteoporosis treatment.

Federico et al, (2009) conducted a study in Cleveland Clinic Ambulatory Research Network, USA, regarding barriers to supplemental calcium use among women in suburban family practice. The study was undertaken to(1) identify predictors of calcium supplement use versus non-use, (2) understand barriers to calcium supplementation, and (3) determine the potential impact of physician recommendation on calcium supplement use. Surveys were self-administered by 185 women, ages 20 to 64 years. The researcher compared demographic characteristics, health beliefs, and health behaviours of those women who reported never using calcium supplements with those who presently took calcium supplements. The result showed that leading barriers for never-users were lack of knowledge about the need/importance of increasing calcium intake, lack of motivation to start supplements, and the belief that their dietary calcium intake alone was sufficient. 96% of never-users reported that they would consider taking a calcium supplement if recommended by their physician. The study concluded that many patient-identified barriers to calcium supplementation seem amenable to focused and brief office-based interventions that could increase the number of women meeting calcium intake guidelines.

Gallin et al, (2010) conducted a cross-sectional study to determine the relationship between dietary nutrients and bone mineral density among 225 healthy

North Indian women in India. The daily dietary intake of energy, protein fat and calcium and the amount of physical activity were assessed. BMD at the lumbar Spine, femoral Neck was measured by dual – energy, X-ray absorptiometry. Body mass index physical activity and educational level were positively correlated with BMD. The result showed that Daily dietary energy, protein and calcium intakes and physical activity were positively correlated with BMD. The study concluded that dietary pattern coupled with higher education levels and greater physical activity favored bone health.

Garcia et al,(2010), conducted an experimental study to assess the knowledge of post-menopausal osteoporosis among 3 post-menopausal women in Malaysia. The study result revealed that level of knowledge on osteoporosis and its treatment was good with a mean score +/- S.D. of 69.0 +/-9.5 in the patient and profession group respectively the difference in knowledge scores between the two groups was statistically significant ($p<0.001$).The study concluded that 40 item questionnaire is a reliable and valid instrument for measuring knowledge on osteoporosis in the Malaysian setting.

Harold B. Weiss (2011), conducted a study in Department of Family Medicine, Turkey. The objective of the study was to evaluate the awareness, perception, sources of information, and knowledge of osteoporosis in a sample of rural Turkish women. The sample were 768 women of mean age 40-75years. The tool used were a structured questionnaire. The result showed that awareness and accurate definition of osteoporosis was high in younger and high educated women ($p<0.001$). Television was the main source of knowledge with the rate of 55%, doctors and nurses/midwives were the second and third sources, respectively. Low

calcium in diet and menopause were the first two risk factors chosen for osteoporosis. Knowledge about osteoporosis among rural Turkish women is low(<24%), and 76% of women are unaware of the risk factors and consequences of osteoporosis. The study concluded that, appropriate educational programs should be planned according to community needs, and the target of these programmes should be less educated and older women.

Janz and Becker (2012) conducted a population study to discover the ecological factors influencing the prevalence of osteoporosis among 2.2 million older women in USA. A sample that represents 2.2 million US residents. The total sample was divided into two groups [group A &B] by using random method. Ecological influence variables such as emotional support, financial support, smoking, housing, milk consumption and self-reported measures of osteoporosis. The results showed that the group-A had a 12% decreased prevalence of osteoporosis in older women who had decreased emotional support, had increased financial support, owned their homes and had been drinking adequate milk. The group-B had predicted a 19% increased prevalence of self-reported fractures among older women who had decreased emotional support, decreased financial support and had the history of smoking. The study concluded that ecological factors can be considered for older women in making decisions about screening for disease as well as preventive health education.

Jones Katz et al (2012) conducted a cohort study in University of Vermont College of Medicine, USA. The objective was to determine whether higher levels of physical activity are related to lower incidence of hip, wrist, and vertebral fractures. The sample were 9704 non black women 65 years of age or older. The tool used for

assessing the physical activity was questionnaire. The result showed that higher levels of leisure time, sport activity, and household activities, fewer hours of sitting daily were associated with a significantly reduced relative risk for hip fracture. Very active women had a statistically significant 36% reduction in hip fractures compared with the least active women. The study concluded that total physical activity, hours of household activities per day, and hours of sitting per day were significantly associated with wrist or vertebral fractures.

Leathermann et al (2013) conducted a cohort study in Kaiser Permanente Centre for Health Research, Portland, regarding older women with fractures: recommended osteoporosis screening and treatment. The study was done to examine older patients with fractures are not managed in accordance with evidence-based clinical guidelines for osteoporosis characterize the gap between guidelines and actual practice with regard to bone mineral density measurement and treatment of older women after a fracture. The sample were 3812 women with an average age of 71.3 years. The researcher collected the databases and the clinical electronic medical records to obtain data on demographics, diagnoses, drugs dispensed by the pharmacy, and the measurement of bone mineral density. The result showed that12% of the women had a diagnosis of osteoporosis prior to the index fracture; 10.7% had an increased risk for secondary osteoporosis and 38.8% had an increased risk for falls because of a diagnosis or medication, 46.4% of the study population had been managed as specified by clinical guidelines. The study concluded that enhance education and facilitate processes of care will be necessary to reduce this gap .It may be fruitful to target high-risk subgroups with suitable interventions for prevention of re fracture.

Macleod et al (2011) conducted a descriptive study in MRC human nutritional research, United Kingdom(UK).The objective of the study was to review the evidence of diet and nutrition on osteoporosis and provide recommendations for preventing osteoporosis, in particular, osteoporotic fracture. The following were considered; calcium, vitamin-D, phosphorous, magnesium, protein and fluorine, other potential dietary influences on bone health also discussed, including vitamins, trace elements, electrolytes, acid-base balance, phyto-oestrogens, vegetarianism and lactose intolerance. The result showed that there is sufficient relationship between the diet and nutrition with the bone mineral status. Growth rate or bone turnover in children and adolescents have benefits in old age by reducing the osteoporotic disease risk to 27%. The study concluded that current health eating advice to decrease sodium intake, to increase potassium intake, and to consume more fresh fruits and vegetables is unlikely to be detrimental health and may be beneficial.

Mohammed Faisal (2009), conducted a study in Pune to assess the prevalence and the relative importance of risk factors for low bone mass among 172 women above 40 years of age. The samples were selected through random sampling method. Data were collected on anthropometry and life style factors in apparently healthy 80 pre and 92 post-menopausal women who are in the age group of 40-75 years. The study results showed that the prevalence of osteoporosis (57%) was highest at the lumbar spine among post-menopausal women, while prevalence of osteopenia (28.4%) was high among pre-menopausal women. The study concluded that age, weight, height, menopause, low intake of calcium, poor sunlight exposure are the major factors contributing to bone loss in Indian women above 40 years of age.

Nussbam (2009) conducted a study in the Dept. of Community Medicine of Iran. The objective of the study was to determine the knowledge, attitude and preventive practice of women above 45 years old. The sample were 770 women were selected through clister sampling in Kerman, Iran The tool used was the interview method. The result showed that the average score for knowledge, attitude and practice( KAP) was 9.3 out of 21, 2.6 out of 5 and 1.5 out of 6, respectively. Adequate osteoprotective exercise and sufficient calcium intake were found only in 3.8% and 5.5% of subjects, respectively. The study concluded that significant relationship between the score of preventive practice and all the following parameters such as level of education, hearing about osteoporosis, knowledge score, perceived barrier to preventive actions and perceived seriousness of osteoporosis are found.

Rosales et al, (2007) conducted a Cross-sectional study on prevalence of osteopenia and osteoporosis in postmenopausal women and its relation to risk factors ,with 389 samples analyzing the following variables- age, index of body mass and time of treatment with hormone replacement therapy, comparing the information with the result of bone densitometry. The study was conducted over a 6 month period. The results of the study was that the samples with overweight have one higher percentage of osteopenia and osteoporosis than normal weight. The results showed that 90.4% of the study participants with overweight have 1 higher percentage of osteopenia and osteoporosis. The study suggests that early diagnosis provides an excellent opportunity to address these problems but we must not forget that the best treatment is prevention from an early age.

Shantilal H Pawar (2007), conducted a descriptive study in Raichur on assessment of knowledge of women regarding post menopausal osteoporosis with a view to develop health education module. The sample consists of 150 educated women and the sampling technique used is nonrandom purposive sampling. Data are collected through a structured interview schedule within a span of 25-30 days. The results showed that there was lack of knowledge and awareness regarding osteoporosis, 38% are unaware of the prevention of osteoporosis and 21.3% are unaware of the disease osteoporosis and with the results a health education module regarding postmenopausal osteoporosis was developed.

Stretcher et al. (2006) in Iran, conducted a study regarding risk factors of osteoporosis in women over 50 years of Age. The sample were 796 women over 50 years of age. The analysis were performed using t-test, and analysis of variance. The result showed that 147 women (18.5%) were identified as having osteoporosis. Significant correlations were found between osteoporosis and parameters of age, age at menarche, parity, years of menstruation, educational level, job, physical activity, exercise, body mass index (BMI), usage of oral contraceptive pills and menopausal status. The women more than 15 years since menopause were identified as significant risk factors for osteoporosis. In comparison to being a ‘housewife’, having a job and physical activity of more than 3 hours a week and a body mass index (BMI) of morethan 25 were identified as protectors against osteoporosis .The study concluded that these findings should help to identify women at risk and to design an early strategy based on eliminating modifiable risks for prevention of osteoporosis.

Zhou et al.(2012) conducted a study on Muscular strength measurements to indicate bone mineral density loss in postmenopausal women. A sample of 293 healthy postmenopausal women with a mean age of 54.22 ± 3.85 years were enrolled in this study. They were grouped in to five by age according to World Health Organization life expectancy ie. 45-50 years, 51-53 years, 54-56 years, 57-59 years, and 60-64 years. Total BMD, L2-L4 BMD, and femoral neck BMD were measured by dual-energy X-ray bone densitometry, then isokinetic and isometric muscle strength of the right hip and trunk muscles were measured during contractile exercise. The Results shows Different optimal strength measurements were identified for different age groups and the Bone Mineral Density reduces2-8% during the age upto 53 years, decreases 2-6% till the age group of 59 years, and reduces to 3-5% after 60 years of age. Age-appropriate testing mode can improve detection of osteoporotic fracture risk in early menopause by determining muscular strength reduction related to BMD loss. This may enable early initiation of preventative therapies.

**2. Studies related to other interventions on knowledge and attitude about osteoporosis and its prevention**

Aloia JF (2013) conducted a study on Calcium and vitamin D supplementation in postmenopausal women at an ambulatory research center among 159 postmenopausal healthy white women participated in this double-blind, placebo-controlled parallel, longitudinal factorial study that was 6 months in duration.Subjects were randomly allocated to 4 groups: 1) double placebo, 2) calcium (1200 mg daily) plus placebo, 3) vitamin D3 (100 μg) plus placebo, and 4) vitamin D3 and calcium. Serum and urine were collected fasting and 2 hours after a

calcium load at baseline and at 3 and 6 months. Before study medication, a calcium load resulted in a decline in PTH and an increase in urinary calcium excretion There was a decline in PTH in the vitamin D groups in the fasting state compared with placebo. Suppression of PTH was greater after a calcium load in the vitamin D groups. A calcium load decreased PTH and raised urinary calcium. Fasting PTH declines with vitamin D supplementation. PTH declines after calcium intake. Supplementation of the diet with 1200 mg calcium/d reduces bone turnover markers, whereas supplementation with up to100 μg vitamin D3/d does not.

Hochbam (2013) conducted a cross-sectional and longitudinal study in Spain, to assess the effectiveness of exercise and bone mass among adults in Spain.153 post menopausal women of age group 55-65 years were selected as samples, 77 in control group, and 76 in the intervention group. The study results showed that the impact of jumping and weight lifting exercise appears to be the most efficient for enhancing bone mass especially in post-menopausal women. The results showed that there is a greater impact in the improvement of bone mass (mean difference- 3.2 points, 95% confidence interval – 4.23to -2.12: $p<0.001$) compare with those who did not .The study concluded that weight bearing exercise in general and resistance exercise, along with exercise targeted to improve balance, mobility and posture should be recommended to reduce the risk of falling and its associated morbidity and mortality.

Al Jundish et al, (2011) conducted a controlled trial study in Japan, to examine the effect of community rebased nutrition education intervention on calcium intake and bone mass in Vietnamese postmenopausal women. A total of 140 women's were included in this study. The result revealed that calcium intake in the

intervention group had increased the bone mass significantly ($p<0.01$) while it had no significant changes in control groups. The intervention led to a decrease in serum parathyroid hormone by 32% ($p<0.001$). The study concluded that nutrition education intervention was effective in improving calcium intake retarding bone loss in the studied subjects.

Aloia Dhaliwal et al, (2013) conducted a study to investigate whether patients could be effectively educated with regard to osteoporosis and lifestyle modification during their outpatient visits to an orthopedic surgeons office. The study was done among 80 female. The study result revealed that in response to the educational intervention, significant improvements were seen in terms of the patients ability to define osteoporosis ($p=0.004$), the ability to identify being female as a major risk factor ($p<0.001$) and the understanding that females need to begin adequate calcium intake at a young age ($p<0.001$) significant increase in daily calcium intake ($p<0.001$) and exercise level also occurred ($p<0.003$). The study concluded that education regarding osteoporosis prevention and lifestyle modification that can be performed in an in expensive fashion and that can be easily replicated in most offices both in the community and in academic settings.

Evelyn Pessoa Soriano (2008) by the Department of Agriculture Human Nutrition Research Centre at Tufts University, conducted a study on Aging and bone health to find out the effect of calcium and vitamin D supplementation on bone density in men and women 65 years of age. The sample were 176 men and 213 women 65 years of age or older who were living at home. The researchers studied the effects of three years of dietary supplementation with calcium and vitamin D on bone mineral density and the incidence of non-vertebral fractures. The result showed

that the difference between the calcium–vitamin D and placebo groups was significant at all skeletal sites after one year, but it was significant only for total-body bone mineral density in the second and third years. Of 37 subjects who had no vertebral fractures, 26 were in the placebo group and 11 were in the calcium–vitamin D group (P<0.02). The study concluded that dietary supplementation with calcium and vitamin D moderately reduced bone loss measured in the femoral, neck, spine, and total body over the three-year study period and reduced the incidence of non-vertebral fractures.

Hanontork et al, (2012) conducted a quasi experimental study in two community centres in USA, to examine the awareness of osteoporosis prevention among pre and post-menopausal women. The sample consists of 130 women of age group 30 to 55 years. The researcher administered a baseline knowledge test, followed by a health education intervention and, 2 weeks later by a post-test. Participants received one point for each correct answer and scores were added (≤14).The result showed that a significant increase in osteoporosis knowledge post intervention (paired t 60 = −9.5, P < .01).The study concluded that the efficacy of educational intervention in improving osteoporosis awareness; and point to the potential for knowledge acquisition aimed at developing community-based prevention strategies at the community.

Madwu et al,(2013) conducted a study on effects of walking on the preservation of bone mineral density in perimenopausal and postmenopausal women through a systematic review and meta-analysis, to critically evaluate the effects of a walking intervention on bone mineral density (BMD) in perimenopausal and postmenopausal women and to identify the optimal duration of this walking exercise

intervention. Two independent reviewers assessed for eligibility randomized and nonrandomized controlled trials evaluating the effects of walking on BMD in perimenopausal and postmenopausal women. Meta-analysis of trials assessing lumbar spine BMD showed no significant effects regardless of the length of the intervention duration. BMD at the femoral neck increased after long intervention durations (6 months to 1-2 years). Although no significant effect could be seen when all trials assessing femoral neck BMD were taken into account effects. The effects of walking on the radius and whole body were not significant thus walking as a singular exercise therapy has no significant effects on BMD at the lumbar spine, at the radius, or for the whole body in perimenopausal and postmenopausal women. Although significant and positive effects on femoral neck BMD in this population are evident with interventions more than 6 months in duration.

Mellomy et al, (2011) conducted a descriptive study in USA to evaluate the effectiveness of a multidisciplinary educational and exercise programme for individuals at risk for osteoporosis related fractures. A total of 375 adults were participated in this study. The study result revealed that the paired t-tests showed significant improvements at course end in all measure for the 87% completing the course. A repeated measure analysis of variance after 2 years with 79% retention indicated that adherence to nutrition recommendations was maintained at 2 year follow-up whereas exercise adherence decreased but continued to exceed baseline measure ($p<.0001$) at 2 years. Participants attended two strength training sessions and 150 minutes aerobic exercise per week and consumed an average of 97% and 99% of the recommended vitamin D. The study concluded that the multidisciplinary exercise and educational programme can significantly reduce risk factors for

osteoporosis and related fractures. Participants maintained lifestyle modification for a minimum of 2 years despite advancing age.

Oh Egyoo, et al, (2012) conducted a study on effects of a three-month therapeutic lifestyle modification program to improve bone health in postmenopausal Korean women in a rural community through a randomized controlled trial, examining the effects of a 3-month therapeutic lifestyle modification (TLM) intervention on knowledge, self-efficacy and health behaviors related to bone health in postmenopausal women in rural Korea. Forty-one women ages 45 year or older were randomly assigned to either the intervention (n = 21) or control (n = 20) group. The intervention group completed a 12-week, 24-session TLM program of individualized health monitoring, group health education, exercise, and calcium-vitamin D supplementation. Compared with the control group, the intervention group showed significant increases in knowledge and self-efficacy and improvement in diet and exercise after 12 weeks, providing evidence that a comprehensive TLM program can be effective in improving health behaviors to maintain bone health in women at high risk of osteoporosis.

Sander (2010), conducted a cross sectional study in clinical gerontology unit, Adden Brookes hospital, Cambridge .The objective of the study was to examine the effects of milk consumption on current bone mineral density at the hip and spine. The sample were 284 community based women aged 44-74 years. Based on their average milk consumption up to age 25, from age 25-44, and from age 44 to the present time as, 1 glass/day, less than 1 glass/day but more than 1 glass/week, or less than 1 glass/week. The result showed that milk consumption up to age 25 was a significant independent predictor of bone mineral density at

all sites in multiple linear regression analyses controlling for age, body mass index, menopausal status, smoking, ever use of hormone replacement therapy or oral contraceptives, physical activity, and alcohol intake. The effects of milk consumption from age 25-44 years and from age 44 years to the present were similar in direction though not statistically significant. The study concluded that frequent milk consumption before age 25 favourably influences hip bone mass in middle aged and older women.[15]

**3. Reviews related to effectiveness of video assisted teaching programme on osteoporosis**

Michiko Franzén (2011) conducted a study on Osteoporosis Prevention Education for Young Women to explore the effectiveness of video assisted teaching regarding osteoporosis among young women. The method of this study was literature review. According to the literature search, finally seven scientific articles were selected. Those studies were conducted between years 2001-2008 and four experimental designs research articles and three randomize-controlled designs research articles. The articles were analyzed based on education program design, contents of studies, education method and material and the measurement for effectiveness of osteoporosis education. Results of this study provided evidence that osteoporosis prevention education was effective for young women. All of studies have shown positive changes in osteoporosis knowledge. This video assisted health education contributes to the prevention of osteoporosis. Therefore, this thesis is useful for healthcare workers who are working osteoporosis-related education and also adolescents and young adult women.

Singer Aj et al. (2012) did a descriptive study in the menopausal women to determine the knowledge of osteoporosis and its prevention. It include the causes, prevention and management of osteoporosis. Knowledge of specific guidelines ranged from 21-90%. Subjects especially lacked the knowledge of the dietary intake of calcium to prevent osteoporosis. Only 28% have awareness about the menopausal osteoporosis and 12% are aware of the preventive measures of osteoporosis. The study concluded that knowledge is unaffected by age, education, occupation, income, marital status, dietary habits. Further education is needed to improve the knowledge of first aid practices.

Uormila Jyothi, Kolar (2011), conducted a study on the effectiveness of structure teaching programme regarding prevention and lifestyle modification of osteoporosis among the rural women at Kolar District. The study was conducted among 100 samples of women in the age of 35-50 years. The research design used is pre-experimental (one group pre test and post test design). Structured interview schedule was adopted by the researcher to collect the data from the subjects, prior to the study the purpose of study was explained to the subjects. Pre test to the subjects was conducted and structured teaching programme was implemented. Assessment was done after 7 days of the implementation of the structured teaching programme. Descriptive and inferential statistics like mean, median, standard deviation, paired 't' test, co-relation co-efficient and chi-square was used for data analysis and presented in the form of tables and graphs. The results of the study showed that there was a significant increase from the pre test and post test knowledge scores with a mean difference 5.62 , $P<0.05$ regarding prevention and life style modification of osteoporosis among rural women.

Vinolia Shantha Kumari, (2010), conducted a study on effectiveness of video assisted teaching module regarding knowledge on preventive measures on osteoporosis among elderly women at selected homes for the aged in Mysore district. Data were collected among 50 elderly women aged 60- 80 years as samples. The sampling is done through purposive sampling. The research design used is one group pre test post test design. The investigator collects the data by administering structured knowledge questionnaire on the first day as a pretest, conducts video assisted teaching programme regarding osteoporosis and its prevention on the same day. Then after 7 days post test is conducted by administering same structured questionnaire as a post test. After video assisted teaching, the postmenopausal women's knowledge increases. Mean pre and post test value were 10.26 and 21.55. The study concluded that 60.5% of post menopausal women gained adequate knowledge after video assisted teaching programme.

Yvonne M Van Hoven(1994), Kirkh School of Nursing, Grand valley state university, USA conducted a study on 'the effect of teaching on knowledge and osteoporosis health beliefs of elderly females'. The sampling technique used is purposive sampling, where the sample included forty elderly females of two senior centers in a mid western metropolitan area. The experimental group was composed of twenty subjects from a senior center. The remaining twenty subjects from a second senior center were included in the control group. The study was conducted using a pre test post test quasi experimental design. Osteoporosis knowledge, self-efficacy, and health beliefs were measured before and after factual information about osteoporosis given to the experimental group. The same pre test and post test measures of the study variables are collected from the control group without

osteoporosis instruction. Analysis of covariance was performed to test the hypotheses. The results of ANCOVA showed that the osteoporosis knowledge of the elderly women receiving osteoporosis instruction was significantly greater than the elderly women without such instruction ($p<0$). Likewise, strength of susceptibility and the benefits of calcium intake belief and self- efficacy of calcium intake of elderly women with osteoporosis instruction was significantly greater than those without osteoporosis instruction($p<0.05$).

Shalmon S chopade et al, (2014) conducted 'A study to assess the effectiveness of planned teaching programme on knowledge of Type I osteoporosis and its prevention among perimenopausal women in selected PHC at Bijapur', A pre-experimental design was used to find the effectiveness of PTP on type I osteoporosis among 100 perimenopausal women between the age group of 30-50 years were included with convenient sampling technique from Bijapur District, Karnataka. Data was collected by using demographic proforma and questionnaires through interview method.. The respondents had inadequate knowledge scores in all the areas. Whereas post test knowledge scores were adequate in the area of General information with mean ± SD as (92.4%, 4.62 ± 5.2) and Causes and risk factors (78%, 3.12 ± 0.58). And moderately adequate knowledge scores in the area of Prevention (71.67%, 4.30 ± 1.05), Clinical manifestation and diagnosis (70.50%, 4.23 ± 0.96), Management (59.50%, 3.57 ± 1.29) respectively. The computed't' values (25.65) between the mean of pre test and post test was more than the critical't' value at a level of significance of 0.05%. The result test shows that the improvement of mean knowledge score of post test when compared with lesser value of pre test. Hence its emerging need of the day to educate all the

perimenopausal women about osteoporosis and its prevention to gain good life during the postmenopausal period.

Aguilera Barreiro (2013) conducted a study on 'Impact of risk factors for osteoporosis on bone mineral density in perimenopausal women' in México. The samples consists of 805 women (35-55 years old) in the City of Queretaro, México. The personal data, family history, habits, such as smoking, alcohol, caffeine (coffee and soft drink of cola) and physical activity. Participants complete the questionnaire on 19 risk factors for osteoporosis one of them with risk. Then the body mass index (BMI), cardiovascular risk and corporal complexion was evaluated and bone densitometry was performed in two diagnostic regions: lumbar spine and total hip and participants were classified as normal bone mass density (BMD), low BMD and osteoporosis. The prevalence of osteoporosis was 7% and of low BMD was 34%, predominantly in the lumbar region and in those with menopause. In osteoporotic women, the age was higher (51 years) and 85% menopausal women, also lower values of weight, height, BMI, waist circumference and hip than women with normal bone mass density. The significantly modifiable risk factors were: low weight, smoking and consumption of soft drink of cola with 6,5, 1,2 and 1,4 (odds ratio), respectively ($p < 0.05$). The significantly non-modifiable risk factors were: menopause (surgical), history of fracture and risk. It is concluded that within the modifiable risk factors for the prevention of osteoporosis, those with the greatest impact were low weight, cigarette and soft drink of cola.

# CHAPTER III

## Methodology

### Introduction

Research methodology is the way to systematically solve the problem. This chapter includes the methodology adopted by the researcher to assess the effectiveness of video assisted teaching on knowledge and attitude of osteoporosis and its prevention among perimenopausal women. It includes research approach, research design, the setting samples and sampling technique. It further deals with the development of tool, procedure for data collection and plan for data analysis and protection of human rights.

According to Denise F Polit (2011) methodology is defined as “the steps, procedures and strategies for gathering and analyzing data”.

### Research Approach

The research approach used for this study was quantitative evaluative research approach.

### Research Design

The research design, pre-experimental one group pretest, post test research design was chosen for this study to evaluate the effectiveness of video assisted teaching on knowledge and attitude of osteoporosis and its prevention among perimenopausal women.

$$O_1 \; X \; O_2$$

$O_1$ - Pretest to assess the level of knowledge and attitude of perimenopausal women.

X - Video assisted teaching programme

$O_2$ - Post test to assess the effectiveness of video assisted teaching programme regarding knowledge and attitude among perimenopausal women.

**Setting of the Study**

The study was conducted in Marappadi Village (Arumanai Panchayat), Kanyakumari District. This rural area is situated 3.5 km away from Sree Mookambika college of Nursing. The population of Arumanai Panchayat is around 16,250. The area is subdivided into 12 sub divisions such as R C street, Chembakathottam, Kuzhichal etc. In this the population of women is around 8500 and perimenopausal women comprising age group 30- 45 years were around 900. The population of Marappadi rural area is around 6000.In this the population of women is around 2200 and the perimenopausal women is around 350, among that 50 perimenopausal women were selected as samples for the study .

**Variables**

**Independent variables** Video assisted teaching on osteoporosis and its prevention

**Dependent variables** Knowledge and Attitude of perimenopausal women regarding osteoporosis and its prevention

**Demographic variables** Age, Education, Religion, Marital status, Number of children, Food habits, Other life style habits, Occupation, Monthly family income, Exposure to sunlight.

**Population**

The population includes –

**Target population:** Perimenopausal women who reside in Marapadi Village.

**Accessible population:** Perimenopausal women who belong to the age group 30 to 45 years of age.

**Sample Size**

The sample size consists of 50 perimenopausal women in the age group 30-45 years.

**Sampling technique**

Purposive sampling technique was used for this study. The sample was selected according to the inclusion and exclusion criteria.

**Sample Selection Criteria**

**Inclusion criteria**

1. Perimenopausal women between the age group of 30-45 years.
2. Perimenopausal women who are willing to participate.
3. Perimenopausal women who are available during the period of study.
4. Perimenopausal women who understand Tamil.

**Exclusion criteria**

1. Perimenopausal women who are on treatment for osteoporosis.
2. Perimenopausal women who attended any other teaching programme regarding osteoporosis and its prevention.

**Data collection tool**

After extensive review of literature and experts' guidance, the tool was prepared. The data collection tool used for the study consists of three sections.

1. Demographic variables
2. Structured knowledge questionnaire
3. Attitude scale

**Description of the tool**

The tool prepared by the investigator to conduct this study consists of three parts.

**Section A: Demographic Variables**

It consists of variables such as, Age, Education, Religion, Marital status, Number of children, Food habits, Other life style habits, Occupation, Monthly family income and exposure to sunlight.

**Section B: Structured Knowledge Questionnaire:**

The knowledge about osteoporosis and its prevention was assessed by structured knowledge questionnaire. It consists of 20 questions. Each right answer carried one mark and the wrong answer carried zero mark. The total score is 20.

**Scoring technique:**

In the Section B, Scoring is given such that each correct answer is scored '1' and the wrongly marked answer is scored as '0'.

**Classification of scores:**

According to the scores obtained the level of knowledge was classified as follows:

1. Excellent **:** 16-20 marks

2. Good : 11-15 marks
3. Moderately adequate : 6-10 marks
4. Poor : 0-5 marks

**Section C: Attitude Scale**

The attitude of the perimenopausal women regarding osteoporosis and its prevention was assessed by the attitude scale, which consists of 10 statements in which 4 statements are negative and six statements are positive. The scale has three response column,

Option A: Strongly agree

Option B: Agree

Option C: Disagree

**Scoring technique**

In the Section C, the scoring is given for the positive statements as follows:

Option a : '2' marks

Option b : '1' mark

Option c : '0' mark

The scoring for the negative statements is given as follows:

Option a : '0' mark

Option b : '1' mark

Option c : '2' marks

**Classification of scores**

According to the scores obtained the level of attitude was classified as follows:

1. Positive attitude : 11-20 marks
2. Negative attitude : 0-10 marks

**Testing of the tool**

**Validity**

The content validity of the tool was done by 5 experts, 4 experts from Obstetrics and Gynaecological Nursing and one expert from Obstetrics and Gynaecological medicine. Necessary suggestions and modifications were incorporated in the final preparation of the tool.

**Reliability**

Reliability of the tool was identified by split half method and evaluated by using Spearman's rank correlation formula. The finding shows the r=0.99. The tool is reliable.

**Pilot study**

The pilot study was conducted in Ponmanai rural area. The samples were selected based on inclusion and exclusion criteria. Five perimenopausal women were selected as study samples. Pretest was conducted for the group using the structured knowledge questionnaire and the attitude scale before the video assisted teaching programme. Then the video assisted teaching programme was given on the same day. After one week post test is conducted for the same group using the same tool. Since the adequacy of the tool was established through the pilot study, the final study was conducted without any change in the tool.

**Data collection procedure**

Final study was carried out from 04/05/2015 to 04/06/2015 consecutively for 30 days. Formal permission for data collection was obtained from the authorities for conducting the study. The study was conducted in the rural areas of Marappadi

Village. The samples were selected based on inclusion criteria. Informed verbal consent was obtained from the samples and confidentiality was assured. The samples were identified using survey method. Purposive sampling method is used. The researcher introduces herself first and the purpose of the study was explained to the samples. The samples are perimenopausal women of age group 30- 45 years.

Pretest was conducted for 50 selected samples by using the questionnaire and the attitude scale. The samples were asked to answer the question by choosing the right answer. 25- 30 minutes was allotted for them. After pretest,video assisted teaching was given to those perimenopausal women for 30 minutes. Then post test was conducted after one week interval the same questionnaire and the attitude scale.

**Plan for data analysis**

The data analysis was done by using descriptive statistics such as percentage, mean, standard deviation, and the effectiveness of video assisted teaching was analyzed by using 't' test. The association between variables was analyzed by using chi-square test the level of significance was tested at 5%( $P<0.05$).

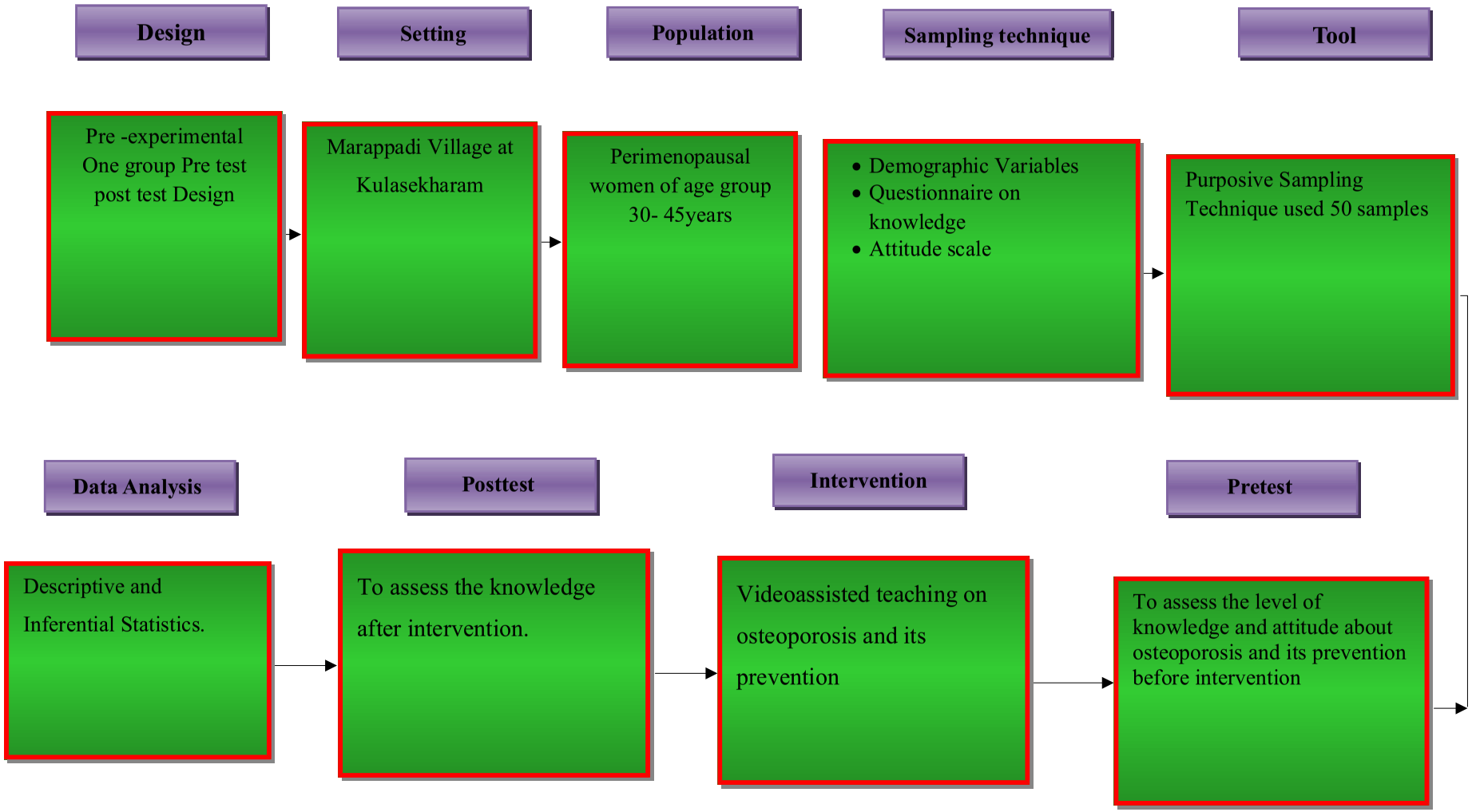


*Figure 2.* Schematic Representation of Research Design

# CHAPTER IV

## Data Analysis and Interpretation

### Introduction

Statistical analysis is a method of rendering quantitative information meaningful and intelligible. It is intended to bring to light the findings of the study.This chapter deals with the analysis and interpretation of data collected in accordance with the objectives stated for the study. The data collected was analysed by using descriptive and inferential statistics.

The analysis and interpretation of knowledge and attitude of osteoporosis and its prevention among perimenopausal women, effectiveness of video assisted teaching was made by descriptive statistics and demographic variables with the knowledge of perimenopausal women regarding osteoporosis and its prevention, were analysed and interpreted by Chi-square test. The level of significance was tested.

### Objectives of the study

1. To assess the knowledge of perimenopausal women regarding Osteoporosis and its prevention.
2. To assess the attitude of perimenopausal women regarding Osteoporosis and its prevention.
3. To evaluate the effectiveness of video assisted teaching on the knowledge and attitude on osteoporosis and its prevention among perimenopausal women after the video assisted teaching programme.
4. To determine the association between the knowledge and attitude of perimenopausal women regarding Osteoporosis and their selected socio-

demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

5. To determine the association between the attitude of perimenopausal women regarding Osteoporosis and their selected socio-demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

**Section A: Demographic Variables**

This section deals with the distribution of samples according to the demographic variables of study subjects.

Table 1

Frequency and Percentage Distribution of Demographic Variables (N=50)

| Sl No. | Demographic variables | Frequency | Percentage |
|---|---|---|---|
| 1. | Age | | |
| | a) 30-35 years | 31 | 62 |
| | b) 36-40 years | 8 | 16 |
| | c) c) 41-45 years | 11 | 22 |
| 2. | Education | | |
| | a) School | 15 | 30 |
| | b) Degree | 23 | 46 |
| | c) c)Postgraduate degree | 12 | 24 |
| 3. | Religion | | |
| | a) Hindu | 37 | 74 |
| | b) Christian | 12 | 24 |
| | c) Muslim | 1 | 2 |
| 4. | Marital status | | |
| | a) Married | 37 | 74 |
| | b) Unmarried | 7 | 14 |
| | c) Separated | 6 | 12 |
| 5. | Number of children | | |
| | a) No children | 5 | 10 |
| | b) 1 or 2 children | 36 | 72 |
| | c) More than 2 children | 9 | 18 |
| 6. | Food habits | | |
| | a) Vegetarian | 3 | 6 |
| | b) Non vegetarian | 6 | 12 |
| | c) Mixed diet | 41 | 82 |
| 7. | Other lifestyle habits | | |
| | a) More than 3 cups of coffee per day | 2 | 4 |
| | b) No such bad habits | 48 | 96 |
| 8. | Occupation | | |
| | a) Cooli | 1 | 2 |
| | b) Business | 2 | 4 |
| | c) Employee | 10 | 20 |

| | | | |
|---|---|---|---|
| | d) Housewife | 37 | 74 |
| 9. | Monthly Family income | | |
| | a) <3000 rupees | 3 | 6 |
| | b) 3001-5000 rupees | 25 | 50 |
| | c) 5001-8000 rupees | 8 | 16 |
| | d) >8000 rupees | 14 | 28 |
| 10. | Sunlight exposure | | |
| | a) Yes | 41 | 82 |
| | b) No | 9 | 18 |

The above table describes that 62% participants were belonging to the age group 36-40 years, 16% belonging to the age group 36-40 years, 22% were belonging to the age group 41-45 years. Regarding educational status 30 % completed their schooling and 46% completed degree and 24% are post graduates. Regarding religion, 74% are Hindus, 22% are Christians and 2% are Muslims. Regarding marital status 74% are married, 14% are unmarried and 12% are separated. In case of dietary habits 6% are non vegetarian, 12% are vegetarian and 82% consumes mixed diet. Regarding other lifestyle habits 4% consumes more than 3 cups of coffee per day and 96% have no other unhealthy lifestyle habits. Regarding monthly family income 50% are earning between 3001-5000 rupees, 16% are earning between 5001-8000 rupees and 28% are earning above 8000 rupees. In respect of sunlight exposure 82% are exposed to sunlight for a variable period of time and 18% are not much exposed to sunlight.

The above findings are represented as bar diagram in the figure 3 to 12 as follows:

1. Distribution of Sample According to the Age of perimenopausal women is represented as Bar diagram in Figure 3.

2. Distribution of Sample According to the education of perimenopausal women is represented as Bar diagram in Figure 4

3. Distribution of Sample According to the religion of perimenopausal women is represented as Bar diagram in Figure 5.

4. Distribution of Sample According to the marital status of perimenopausal women is represented as Bar diagram in Figure 6.

5. Distribution of Sample According to the number of children of perimenopausal women is represented as Bar diagram in Figure 7.

6. Distribution of Sample According to the food habits of perimenopausal women is represented as Bar diagram in Figure 8.

7. Distribution of Sample According to the life style habits of perimenopausal women is represented as Bar diagram in Figure 9.

8. Distribution of Sample According to the occupation of perimenopausal women is represented as Bar diagram in Figure 10.

9. Distribution of Sample According to the monthly family income of perimenopausal women is represented as Bar diagram in Figure 11.

10. Distribution of Sample According to the sunlight exposure of perimenopausal women is represented as Bar diagram in Figure 12.

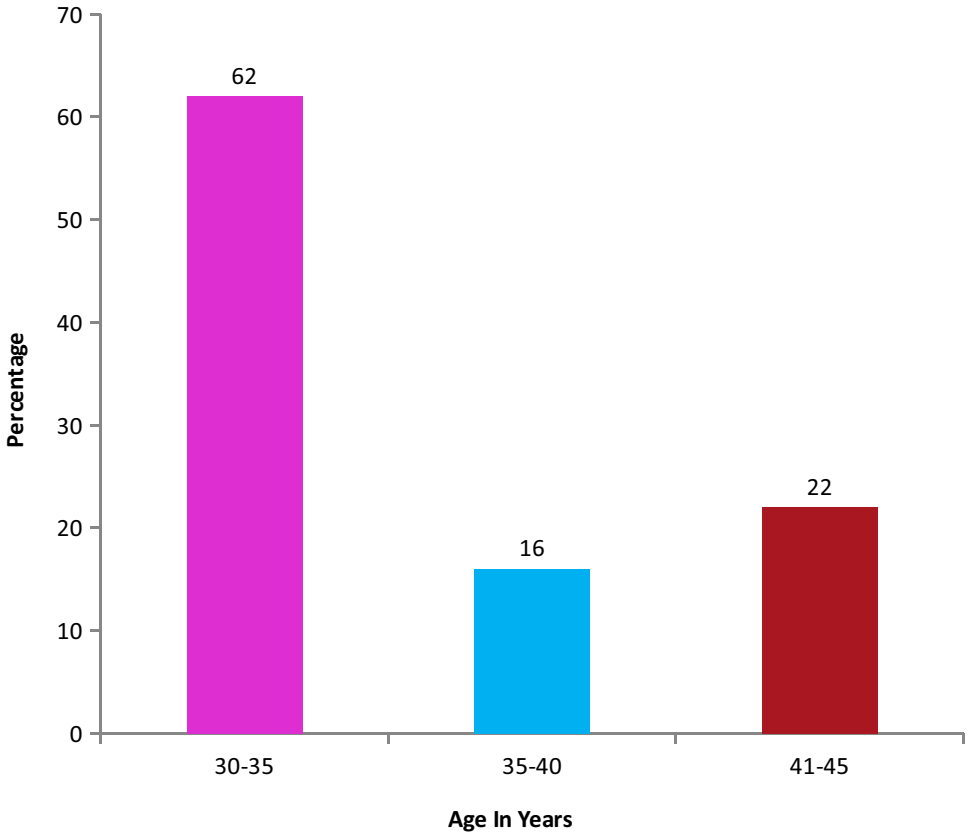


*Figure 3.* Bar Diagram Representing Distribution of Samples According to Age.

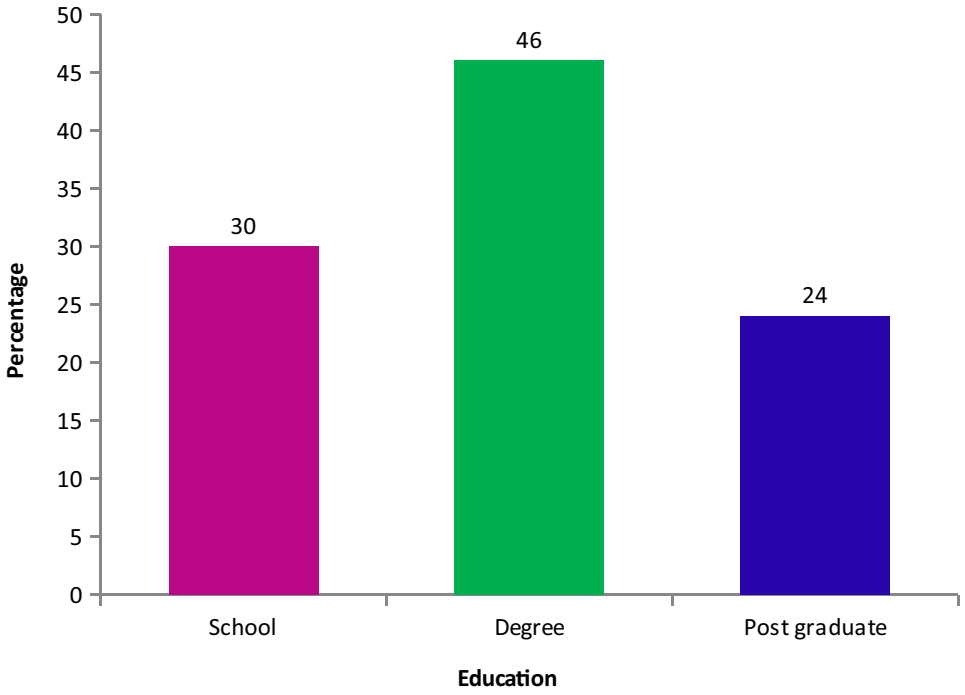


*Figure 4.* Bar Diagram Representing Distribution of Samples According to Education

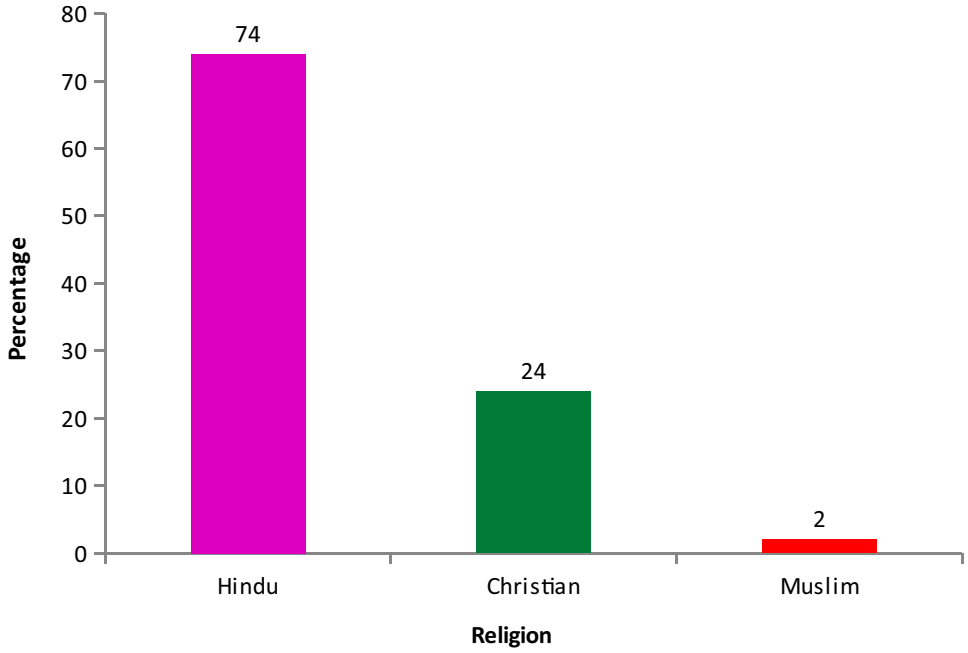


*Figure 5.* Bar Diagram Representing Distribution of Samples According to Religion.

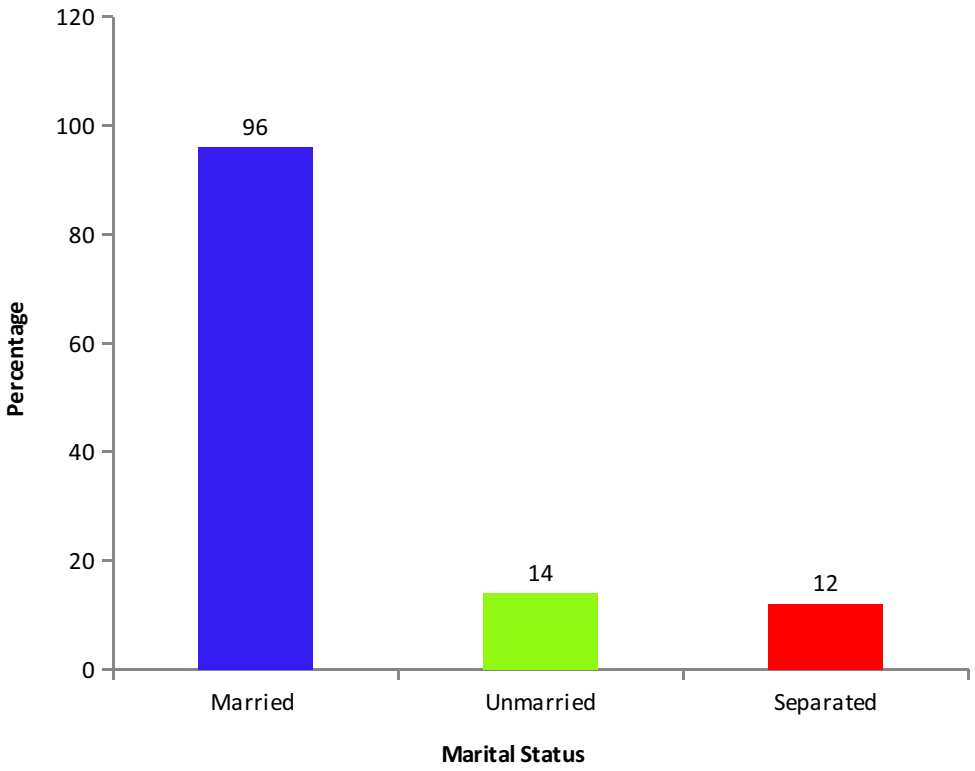


*Figure 6.* Bar Diagram Representing Distribution of Samples According to Marital Status.

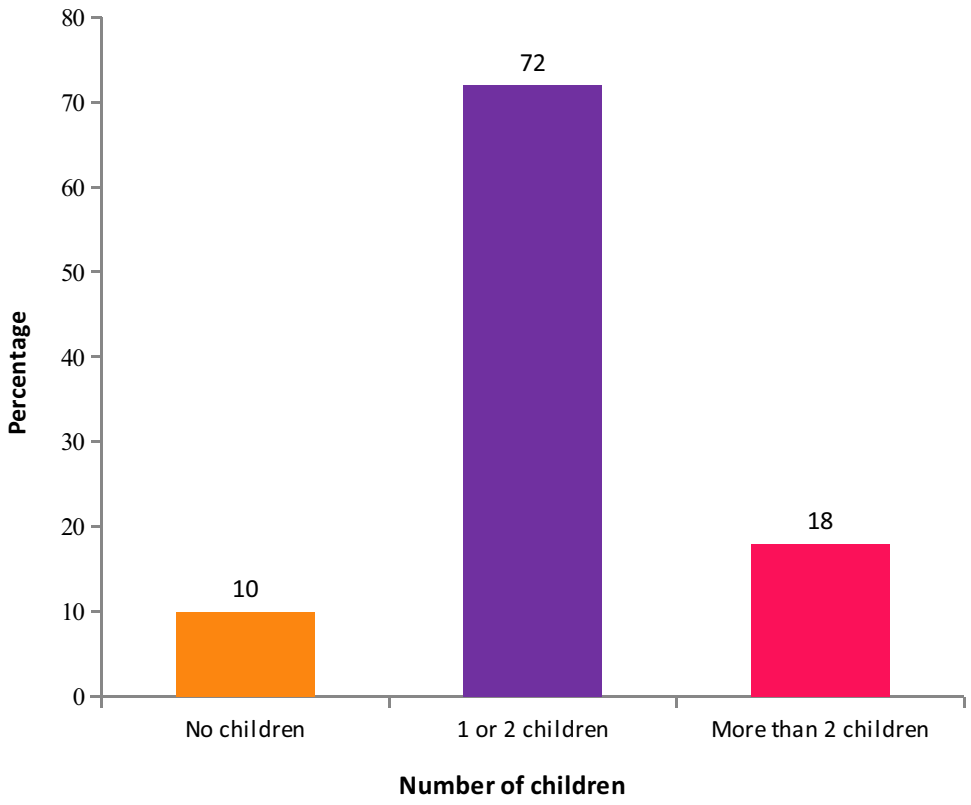


*Figure 7.* Bar Diagram Representing Distribution of Samples According to Religion.

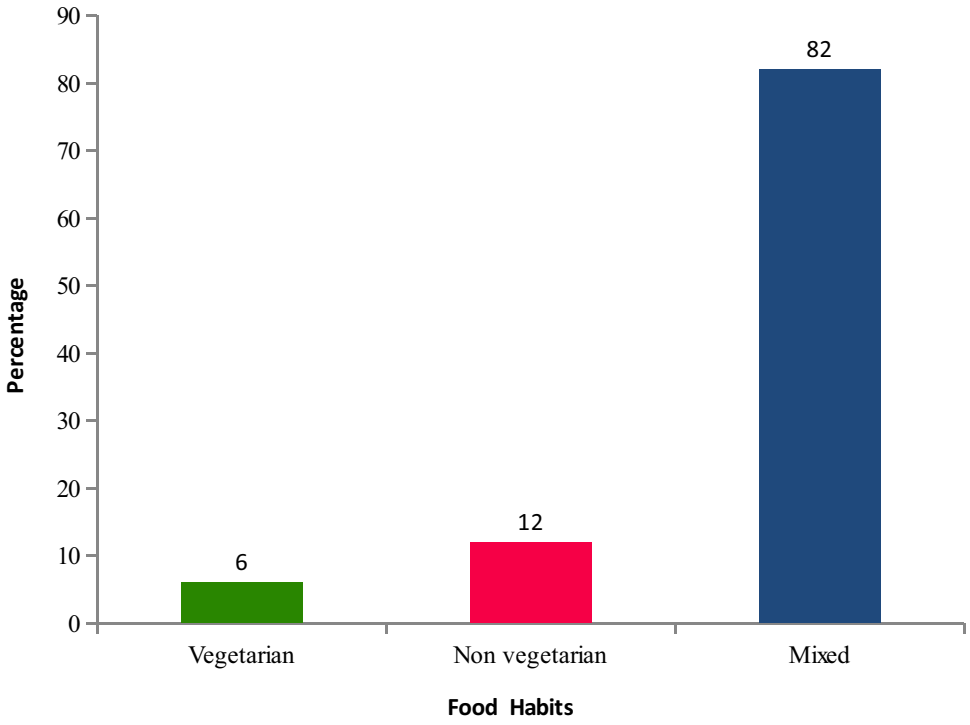


*Figure 8.* Bar Diagram Representing Distribution of Samples According to Food Habits.

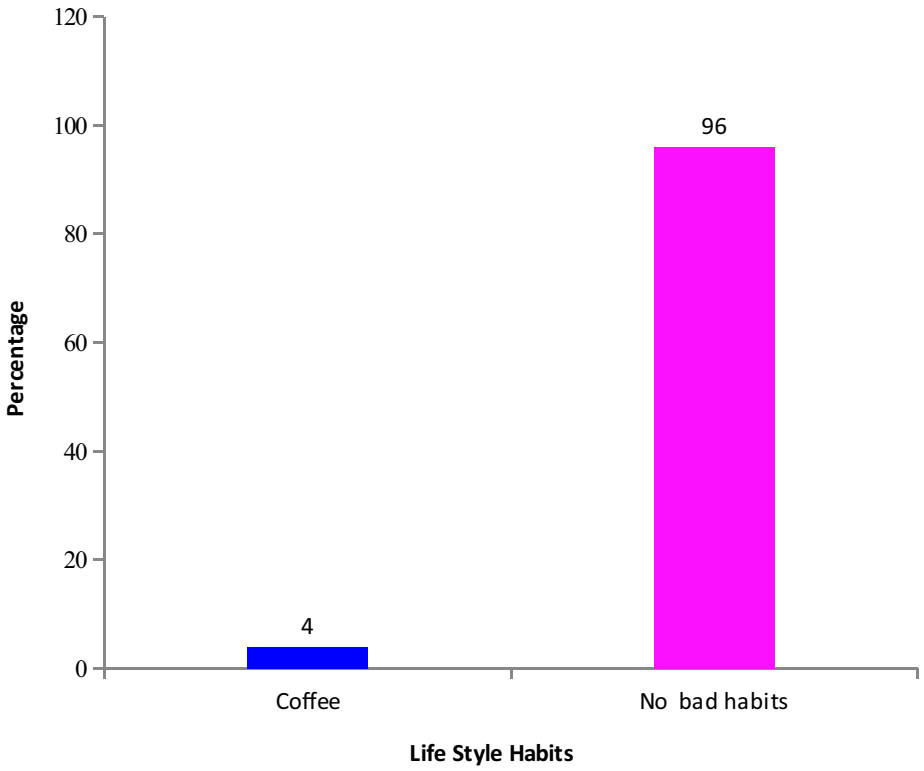


*Figure 9.* Bar Diagram Representing Distribution of Samples According to Religion**.**

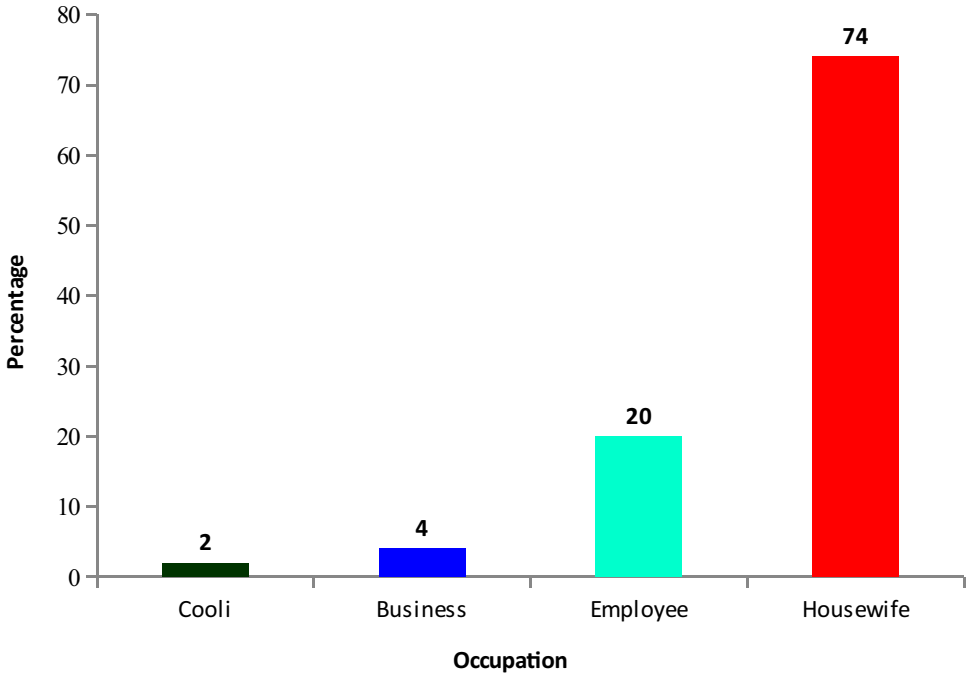


*Figure 10.* Bar Diagram Representing Distribution of Samples According to Occupation.

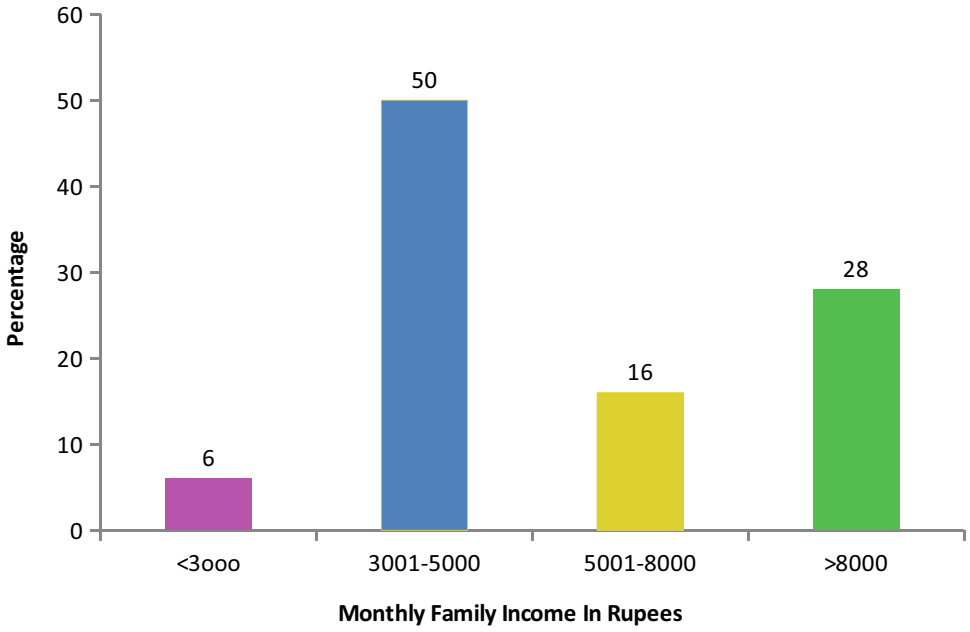


*Figure 11*. Bar Diagram Representing Distribution of Samples According to Monthly Family Income

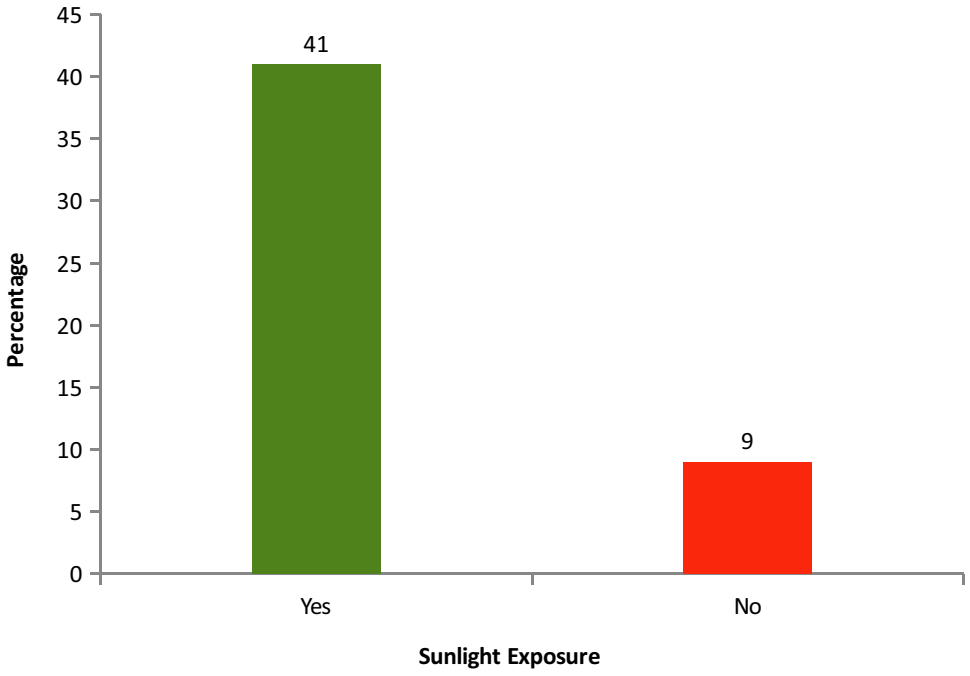


*Figure 12.* Bar Diagram Representing Distribution of Samples According to Sunlight Exposure.

**Section: B**

**Pretest Level of Knowledge and Attitude of Perimenopausal Women.**

This section deals with the assessment of pretest knowledge and attitude regarding osteoporosis and its prevention among perimenopausal women.

Table 2 a

Pretest Level of Knowledge of Perimenopausal Women. N=50

| Category | Excellent | | Good | | Moderately Adequate | | Poor | |
|---|---|---|---|---|---|---|---|---|
| | f | % | f | % | f | % | f | % |
| Knowledge | 0 | 0 | 4 | 8 | 28 | 56 | 20 | 40 |

Note - The above table depicts the pre-test knowledge percentage of perimenopausal women. No women got excellent score and 40% women get poor score regarding knowledge level.

The above findings are presented as bar diagram in the figure 13 a

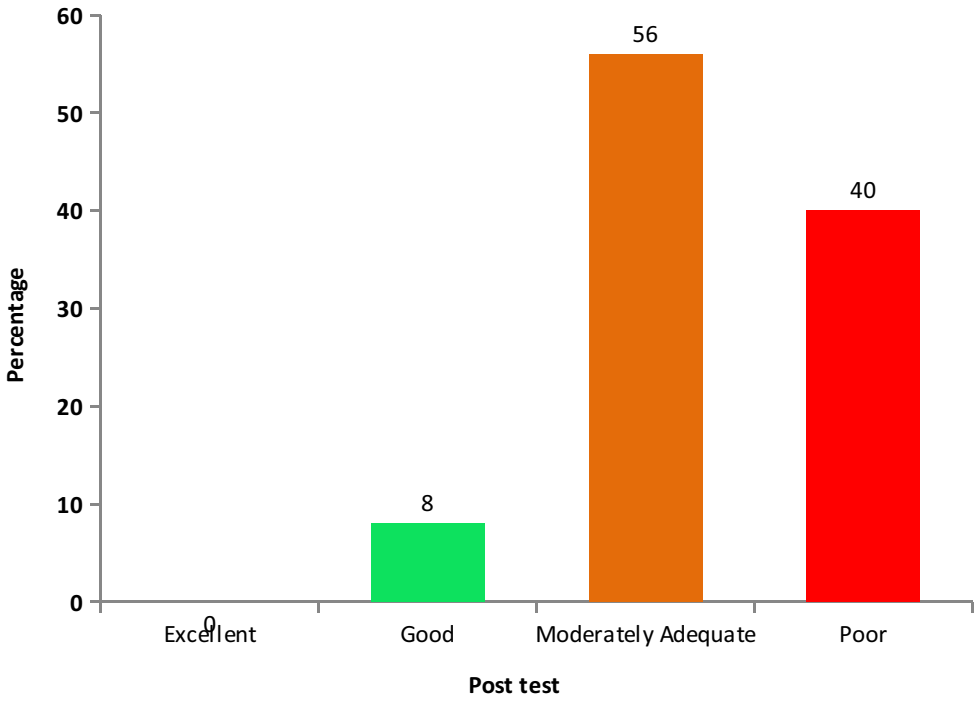


*Figure 13 a.* Bar Diagram Represents Pretest Level of Knowledge among Perimenopausal Women

Table 2 b

Pretest Level of Attitude of Perimenopausal Women. N=50

| Category | Positive | | Negative | |
|---|---|---|---|---|
| | f | % | f | % |
| Attitude | 1 | 2 | 49 | 98 |

Note - The above table depicts the pretest attitude percentage of perimenopausal women. Only 2% of women had positive attitude level and remaining 98% had negative attitude level.

The above findings are presented as bar diagram in the figure 13 b


*Figure 13 b.* Bar Diagram Representing The Posttest Level of Knowledge among Perimenopausal Women.

**Section C: Postest level of knowledge and attitude of perimenopausal women.**

This section deals with the assessment of posttest knowledge and attitude regarding osteoporosis and its prevention among perimenopausal women.

Table 3 a

Posttest level of knowledge of perimenopausal women N=50

| Category | Excellent | | Good | | Moderately Adequate | | Poor | |
|---|---|---|---|---|---|---|---|---|
| | f | % | f | % | f | % | f | % |
| Knowledge | 31 | 62 | 19 | 38 | 0 | 0 | 0 | 0 |

Note - The above table shows that 62% of women got excellent score and 38% got good score no women got poor score in the post test knowledge assessment.

The above findings are depicted as bar diagram in the figure 14 a.

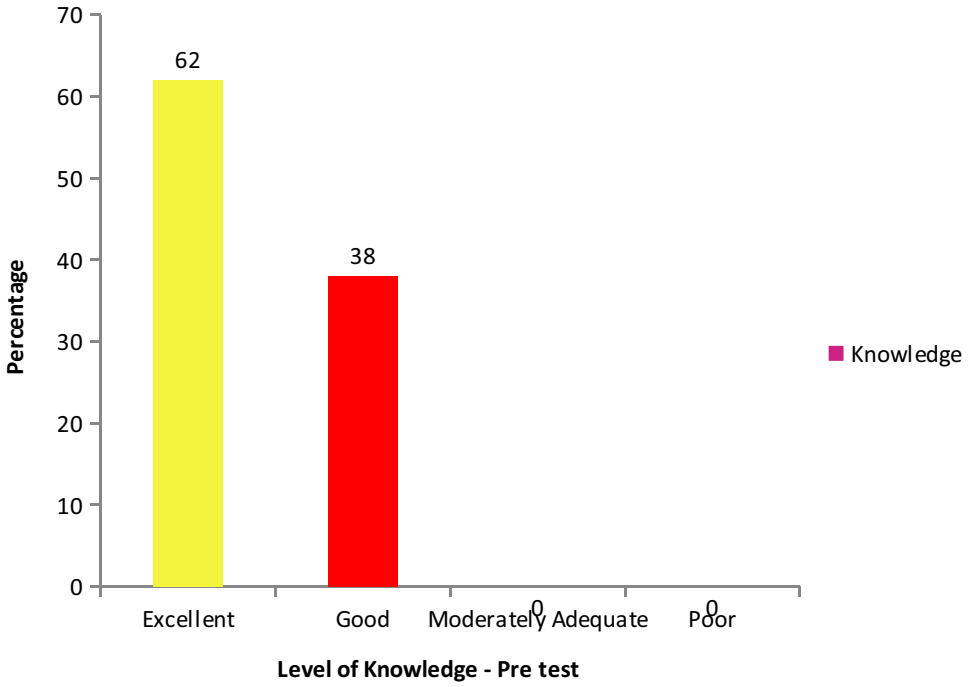


*Figure 14 a.* Bar Diagram Representing the Posttest Level of Knowledge among Perimenopausal Women.

Table 3 b

Posttest Level of Attitude of Perimenopausal Women. N=50

| Category | Positive | | Negative | |
|---|---|---|---|---|
| | f | % | f | % |

| | | | | |
|---|---|---|---|---|
| Attitude | 47 | 94 | 3 | 6 |

Note - The above table depicts the post-test attitude percentage of perimenopausal women. About 94% of woman shows positive attitude level in Post test and only 6% shows negative levels.

The above findings are presented as bar diagram in the figure 14 b

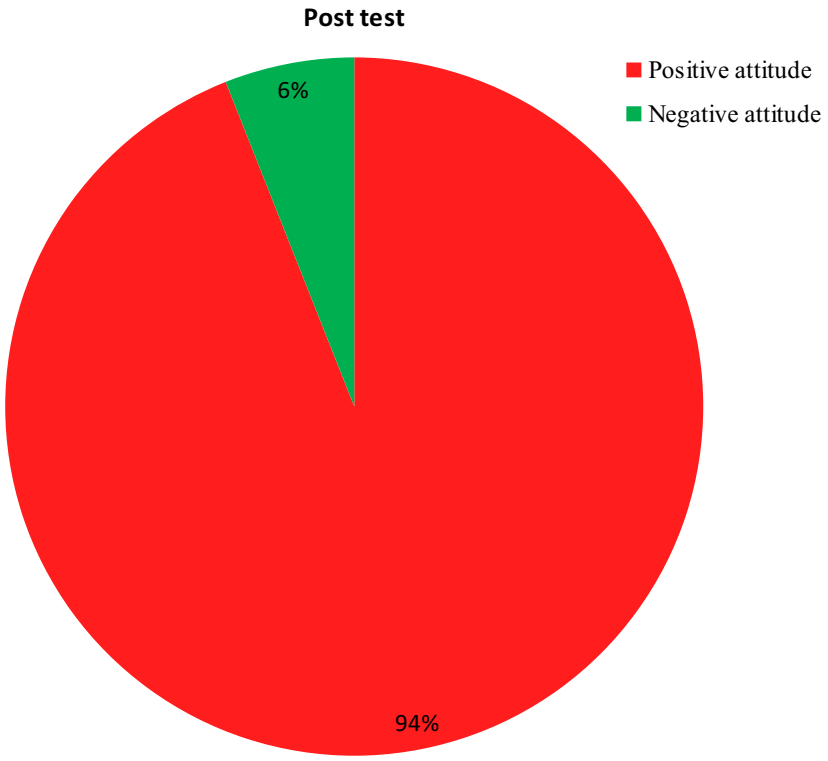


*Figure 14 b.* Bar Diagram Represents the Posttest Level of Attitude among Perimenopausal Women.

**Section D: Comparison of pretest and post test level of knowledge and attitude among perimenopausal women**.

This section deals with the comparison of pretest and post test level of knowledge among perimenopausal women .

Table 4 a

Comparison of pretest and post test level of knowledge among perimenopausal women N=50

| Category | Knowledge level | | | |
|---|---|---|---|---|
| | Pretest | | Post test | |
| | f | % | f | % |
| Excellent | 0 | 0 | 31 | 62 |
| Good | 4 | 8 | 19 | 38 |
| Moderately adequate | 28 | 56 | 0 | 0 |
| Poor | 20 | 40 | 0 | 0 |

Note - The above table shows that, in the pretest level of knowledge of perimenopausal women regarding osteoporosis and its prevention, no women got excellent score and 56% women had moderately adequate knowledge and 20% had poor knowledge. While in the posttest score 62% women got excellent score and no women had poor score.

The above findings are represented as bar diagram in the figure 14a.

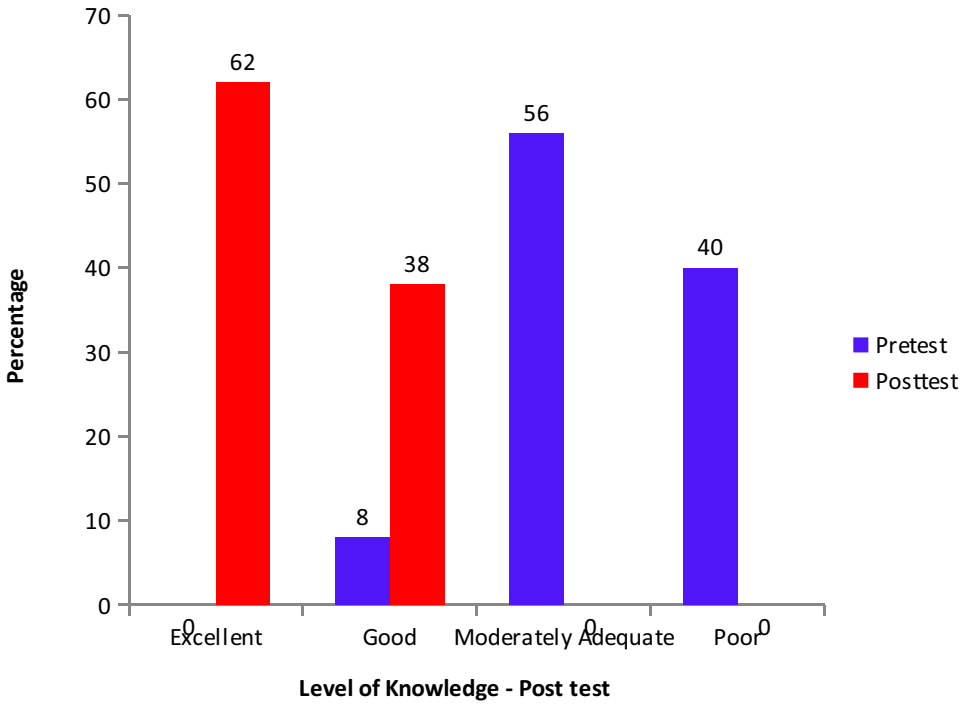


*Figure 15 a.* Bar Diagram Representing the Comparison of Pretest and Posttest Level of Knowledge among Perimenopausal Women.

Table: 4 b

Comparison of pretest and post test level of attitude among perimenopausal women.

N= 50

| Category | Attitude level | |
|---|---|---|
| | Pre test | Post test |

| | f | % | f | % |
|---|---|---|---|---|
| Positive | 1 | 2 | 47 | 94 |
| Negative | 49 | 98 | 3 | 6 |

Note - Regarding attitude level only 2% women got positive score in the pretest and 98% women got negative score. While in post test 94% got Positive score and 6% women got negative score.

The above findings are represented as bar diagram in the figure 14b.

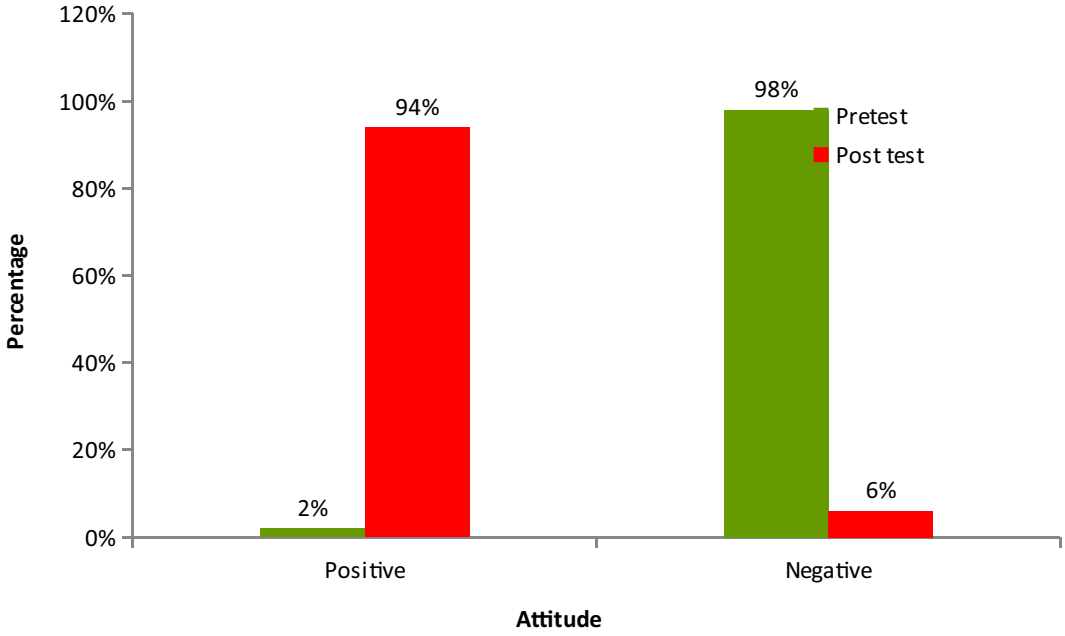


*Figure 15 b.* Bar Diagram Representing Pretest and Posttest Level of Attitude among Perimenopausal Women.

**Section: F Effectiveness of Video Assisted Teaching on the Knowledge and Attitude Level.**

This section deals with the effectiveness of video assisted teaching regarding osteoporosis and its prevention by comparing the pretest and post test score among perimenopausal women.

Table 5

Effectiveness of video assisted teaching programme regarding level of knowledge and attitude about osteoporosis and its prevention among perimenopausal women.

| Category | Pre test | | Post test | | df | t value | Table value |
|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | |
| Knowledge level | 9.32 | 3.59 | 16.68 | 2.058 | 49 | 6.2* | 2.0096 |
| Attitude level | 9.18 | 5.5 | 17.48 | 3.7 | 49 | 3.4* | 2.009 |

*Significance at P<0.05

Note - From the above table, t value =6.2, level of significance =<0.05. The above table depicts that the effectiveness of audio and video assisted teaching programme regarding osteoporosis and its prevention among perimenopausal women. The mean score of the knowledge level was high after giving the video assisted teaching programme from 9.32 to 16.68 and the standard deviation was 3.59 to 2.058 respectively. The above table reveals that the calculated value is higher than that of the table value (t value is 2.0096) with df 49 and 0.05 level of significance(p<0.05). There is significant improvement in the leve of knowledge after video assisted teaching programme. From the above table, the t value is 3.4, level of significance =<0.05. The mean score of the attitude level was high after the video assisted teaching programme from 9.18 to 17.48 and the standard deviation was 5.5 to 3.7 respectively. The above table reveals that the calculated value is higher than that of the table value (t able value is 2.009) with df 49 and 0.05 level of significance(p<0.05). There is significant improvement in the knowledge level and the attitude level after the video assisted teaching programme.

The above findings are represented as bar diagram in the figure 15.

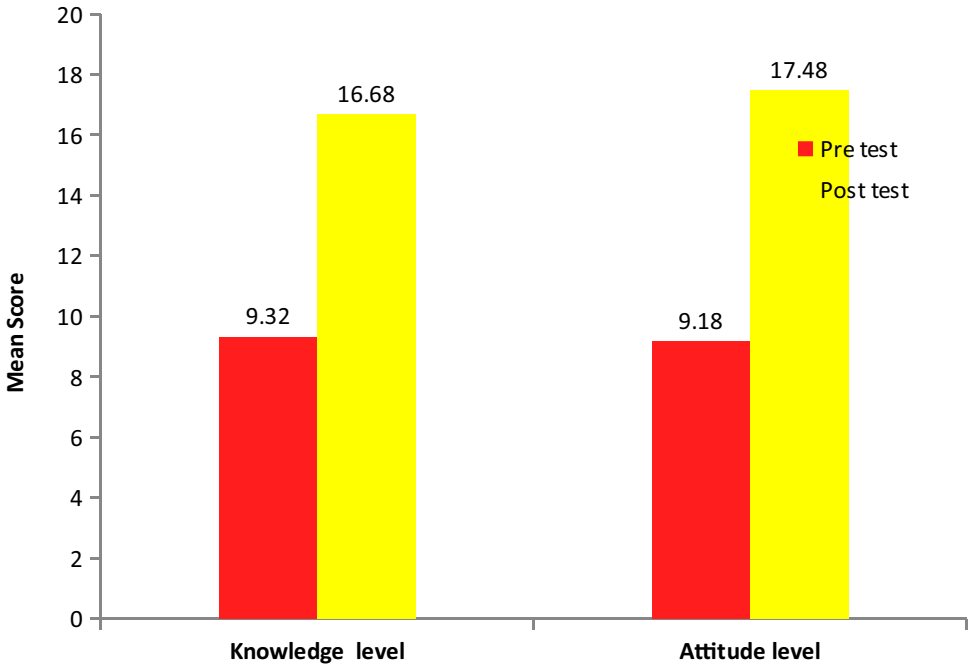


*Figure 16.* Bar Diagram Representing the Effectiveness of Video Assisted Teaching on Knowledge and Attitude Level.

**Section: F Association between the Level of Knowledge and Selected Demographic Variables.**

This section deals with the association between the level of knowledge and selected demographic variables.

Table 6

Association between level of knowledge and selected demographic variables.

| Sl no. | Demographic variables | f | Good | | Moderately Adequate | | Poor | | $\chi^2$ | df | Table value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | f | % | f | % | f | % | | | |
| 1 | Age | | | | | | | | | | |
| | a) 30-35 years | 31 | 12 | 24 | 2 | 4 | 17 | 34 | | | |
| | b) 36-40 years | 8 | 3 | 6 | 4 | 8 | 1 | 2 | 2.6 | 2 | 5.99 |
| | c) 41-45 years | 11 | 2 | 4 | 7 | 14 | 2 | 4 | | | |
| 2 | Education | | | | | | | | | | |
| | a) School education | 15 | 12 | 24 | 2 | 4 | 1 | 2 | | | |
| | b) Degree | 23 | 13 | 26 | 4 | 8 | 6 | 12 | 0.4 | 2 | 5.99 |
| | c) Post graduation | 12 | 4 | 8 | 5 | 10 | 3 | 6 | | | |
| 3 | Religion | | | | | | | | | | |
| | a) Hindu | 37 | 8 | 16 | 12 | 24 | 17 | 34 | | | |
| | b) Christian | 12 | 6 | 12 | 5 | 10 | 1 | 2 | 1.9 | 2 | 5.99 |
| | c) Muslim | 1 | 0 | 0 | 1 | 2 | 0 | 0 | | | |
| 4 | Marital status | | | | | | | | | | |
| | a) Married | 37 | 13 | 26 | 5 | 10 | 19 | 38 | | | |
| | b) Unmarried | 7 | 2 | 4 | 3 | 6 | 2 | 4 | 0.1 | 2 | 5.99 |
| | c) Separated | 6 | 2 | 4 | 3 | 6 | 1 | 2 | | | |
| 5 | Number of children | | | | | | | | | | |
| | a)No children | 5 | 1 | 2 | 3 | 6 | 1 | 2 | | | |
| | b) 1 or 2 children | 36 | 13 | 26 | 5 | 10 | 18 | 36 | 0.8 | 2 | 5.99 |
| | c) More than 2 children | 9 | 2 | 4 | 5 | 10 | 2 | 4 | | | |
| 6 | Food habits | | | | | | | | | | |
| | a) Vegetarian | 3 | 0 | 0 | 2 | 4 | 1 | 2 | | | |
| | b) Non vegetarian | 6 | 2 | 4 | 1 | 2 | 2 | 4 | 2.6 | 2 | 5.99 |
| | c) Mixed diet | 41 | 1 | 3 | 12 | 24 | 1 | 2 | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 6 | 2 | | | 3 | 6 | | | |
| 7 | Other lifestyle habits | | | | | | | | | | |
| | a) More than 3 cups of coffee per day | 2 | 1 | 2 | 0 | 0 | 2 | 4 | 0.1 | 1 | 3.841 |
| | b) No such bad habits | 48 | 13 | 26 | 16 | 32 | 19 | 38 | | | |
| 8 | Occupation | | | | | | | | | | |
| | a) Cooli | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0.1 | 3 | 7.82 |
| | b) Business | 2 | 1 | 2 | 0 | 0 | 1 | 2 | | | |
| | c) Employee | 10 | 2 | 4 | 4 | 8 | 4 | 8 | | | |
| | d) Housewife | 37 | 21 | 42 | 13 | 26 | 3 | 6 | | | |
| 9 | Monthly Family income | | | | | | | | | | |
| | a) <3000 rupees | 3 | 1 | 2 | 2 | 4 | 0 | 0 | 3.7 | 3 | 7.82 |
| | b)3001-5000rupees | 25 | 13 | 26 | 11 | 22 | 1 | 2 | | | |
| | c)5001-8000 rupees | 8 | 2 | 4 | 3 | 6 | 3 | 6 | | | |
| | d) >8000 rupees | 14 | 4 | 8 | 6 | 12 | 4 | 8 | | | |
| 10 | Sunlight exposure | | | | | | | | | | |
| | a) Yes | 41 | 12 | 24 | 3 | 6 | 26 | 52 | 1 | 1 | 3.841 |
| | b) No | 9 | 2 | 4 | 5 | 10 | 2 | 4 | | | |

* Significant at P<0.05

Note - In the above table the values of the scores of excellent and good are combined in to the category good and the remaining scores of moderately adequate and poor are used without any change.

There is no significant association between knowledge and demographic variables such as age, education, religion, marital status, number of children, food habits, other life style habits, occupation, monthly family income and sunlight exposure.

**Section: G Association between the Attitude and Selected Demographic Variables.**

This section deals with association between the attitude and selected demographic variables.

Table 7

Association between attitude and selected demographic variables N=50

| Sl No. | Demographic variables | f | Positive | | Negative | | $\chi^2$ | df | Table value |
|---|---|---|---|---|---|---|---|---|---|
| | | | f | % | f | % | | | |
| 1 | Age | | | | | | | | |
| | a) 30-35 years | 31 | 12 | 24 | 19 | 38 | | | |
| | b) 36-40 years | 8 | 3 | 6 | 5 | 10 | 0.52 | 2 | 5.99 |
| | c) 41-45 years | 11 | 2 | 4 | 9 | 18 | | | |
| 2 | Education | | | | | | | | |
| | a) School education | 15 | 12 | 24 | 3 | 6 | | | |
| | b) Degree | 23 | 13 | 26 | 10 | 20 | 13.27* | 2 | 5.99 |
| | c) Post graduation | 12 | 4 | 8 | 8 | 16 | | | |
| 3 | Religion | | | | | | | | |
| | a) Hindu | 37 | 8 | 16 | 29 | 58 | | | |
| | b) Christian | 12 | 6 | 12 | 6 | 12 | 1.30* | 2 | 5.99 |
| | c) Muslim | 1 | 0 | 0 | 1 | 2 | | | |
| 4 | Marital status | | | | | | | | |
| | a) Married | 37 | 13 | 26 | 24 | 48 | | | |
| | b) Unmarried | 7 | 2 | 4 | 5 | 10 | 0.35 | 2 | 5.99 |
| | c) Separated | 6 | 2 | 4 | 4 | 8 | | | |
| 5 | Number of children | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | a) No children | 5 | 1 | 2 | 4 | 8 | | | |
| | b) 1 or 2 children | 36 | 13 | 26 | 23 | 46 | 1.70* | 2 | 5.99 |
| | c) More than 2 children | 9 | 2 | 4 | 7 | 14 | | | |
| 6 | Food habits | | | | | | | | |
| | a) Vegetarian | 3 | 0 | 0 | 3 | 6 | | | |
| | b) Non vegetarian | 6 | 2 | 4 | 3 | 6 | 0.74 | 2 | 5.99 |
| | c) Mixed diet | 41 | 16 | 32 | 25 | 50 | | | |
| 7 | Other lifestyle habits | | | | | | | | |
| | a) More than 3 cups of coffee per day | 2 | 1 | 2 | 2 | 4 | | | |
| | b) No such bad habits | 48 | 13 | 26 | 35 | 70 | 0.17 | 1 | 3.841 |
| 8 | Occupation | | | | | | | | |
| | a) Cooli | 1 | 0 | 0 | 1 | 2 | | | |
| | b) Business | 2 | 1 | 2 | 1 | 2 | | | |
| | c) Employee | 10 | 2 | 4 | 8 | 16 | 3.30 | 3 | 7.82 |
| | d) Housewife | 37 | 21 | 42 | 16 | 32 | | | |
| 9 | Monthly Family income | | | | | | | | |
| | a) <3000 rupees | 3 | 1 | 2 | 2 | 4 | | | |
| | b) 3001-5000rupees | 25 | 13 | 26 | 12 | 24 | | | |
| | c) 5001-8000 rupees | 8 | 2 | 4 | 6 | 12 | 1.35 | 3 | 7.82 |
| | d) >8000 rupees | 14 | 4 | 8 | 10 | 20 | | | |
| 10 | Sunlight exposure | | | | | | | | |
| | a) Yes | 41 | 12 | 24 | 29 | 58 | 6.12* | 1 | 3.841 |
| | b) No | 9 | 2 | 4 | 7 | 14 | | | |

* Significant at P<0.05

Note - There is significant association between the attitude and the demographic variables such as education and exposure to sunlight. There is no significant

association between the attitude and demographic variables such as age, religion, marital status, number of children, food habits, other life style habits, occupation, monthly family income.

# CHAPTER V

## Results and Discussion

This chapter gives a brief account of the present study including result and discussion compared with some of the relevant studies done in different settings. The findings of the present study were compared with some of the relevant studies done in different settings.

The present study was undertaken to assess the effectiveness of Video Assisted Teaching programme on knowledge and attitude regarding osteoporosis and its prevention among perimenopausal women in the selected areas of Marappadi, Kanyakumari District. The study was conducted in Marappadi rural area at Arumanai in Kanyakumari District. The pre test was conducted using structured questionnaire. After the Video Assisted Teaching Programme the knowledge and attitude level of perimenopausal women was assessed by the same questionnaire. The result and discussion of the study was based on the findings obtained from the statistical analysis. Mean score was used to assess the pre and post test level of knowledge. The statistical analysis 't' test was used to test the significant difference between the pre and post test score. Chi square was used to find out the association between the selected demographic variables with the level of knowledge and attitude regarding osteoporosis and its prevention among perimenopausal women.

**Objectives of the study**

1. To assess the knowledge of perimenopausal women regarding Osteoporosis and its prevention

2. To assess the attitude of perimenopausal women regarding Osteoporosis and its prevention.
3. To evaluate the effectiveness of video assisted teaching on the knowledge and attitude on osteoporosis and its prevention among perimenopausal women after the video assisted teaching programme.
4. To determine the association between the knowledge of perimenopausal women regarding Osteoporosis and their selected socio-demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.
5. To determine the association between the attitude of perimenopausal women regarding Osteoporosis and their selected socio-demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

**Presentation of finding**

The study findings shows the distribution of subjects according to the demographic variables 62% participants were in the age group of 36-40 years,16% were in the age group 36-40 years, 22% were in the age group 41-45 years. Regarding educational status, 30 % of participants completed their schooling and 46% completed degree and 24% are post graduates. Regarding religion, 74% are Hindus, 22% are Christians and 2% are Muslims. Regarding marital status 74% are married ,14% are unmarried and 12% are separated. In case of dietary habits 6% are non vegetarian, 12% are vegetarian and 82% consumes mixed diet. Regarding other lifestyle habits 4% consumes more than 3 cups of coffee per day and 96% have no

other unhealthy lifestyle habits. Regarding monthly family income 50% are earning between 3001-5000 rupees, 16% are earning between 5001-8000 rupees and 28% are earning above 8000 rupees. In respect of sunlight exposure 82% are exposed to sunlight for a variable period of time and 18% are not much exposed to sunlight.

The study findings of the 50 sample were discussed base on the objectives of the study.

The first objective of the study was to assess the knowledge of perimenopausal women regarding Osteoporosis and its prevention

The present study findings shows that the distribution of the samples according to their level of knowledge.

In this study majority of perimenopausal women(40%) had por score, (56%) had moderately adequate score, 8% had good score and no women had excellent score.The findings showed that knowledge score was less among the perimenopausal women. The research findings are congruent Harold B. Weiss (2011), who conducted a study in Department of Family Medicine, Turkey. The objective of the study was to evaluate the awareness, perception, sources of information, and knowledge of osteoporosis in a sample of rural Turkish women. The sample were 768 women of mean age 40-75years. The tool used were a structured questionnaire. Knowledge about osteoporosis among rural Turkish women is low(<24%), and 76% of women are unaware of the risk factors and consequences of osteoporosis. The study concluded that, appropriate educational programs should be planned according to community needs, and the target of these programmes should be less educated and older women.

The second objective of the study was to assess the attitude of perimenopausal women regarding Osteoporosis and its prevention.

The study reveals that among 50 the majority of perimenopausal women (72%) had poor score, (26%) had moderately adequate score, 2% had good score and no one had excellent score. The findings showed that the level of attitude was improved after the intervention programme.

The research findings are congruent with Nussbam (2009)who conducted a study in the Dept. of Community Medicine of Iran. The objective of the study was to determine the knowledge, attitude and preventive practice of women above 45 years old. The samplewere 770 women were selected through cluster sampling in Kerman, Iran. The tool used was the interview method. The result showed that the average score for knowledge, attitude and practice( KAP) was 9.3 out of 21, 2.6 out of 5 and 1.5 out of 6, respectively. Adequate osteoprotective exercise and sufficient calcium intake were found only in 3.8% and 5.5% of subjects, respectively.

The third objective was to evaluate the effectiveness of video assisted teaching on the knowledge and attitude on osteoporosis and its prevention among perimenopausal women after the video assisted teaching programme.

The present study shows that the knowledge towards osteoporosis and its prevention was improved from pretest to post test as mean improvement of 16.68. the improvement was highly significant $p<0.05$.

The research findings are congruent with Yvonne M Van Hoven(1994), Kirkh School of Nursing, Grand valley state university, USA conducted a study on ‘the effect of teaching on knowledge and osteoporosis health beliefs of elderly

females'. The sampling technique used is purposive sampling, where the sample included forty elderly females of two senior centers in a mid western metropolitan area. The experimental group was composed of twenty subjects from a senior center. The remaining twenty subjects from a second senior center were included in the control group. The study was conducted using a pre test post test quasi experimental design. Osteoporosis knowledge, self-efficacy, and health beliefs were measured before and after factual information about osteoporosis given to the experimental group. The same pre test and post test measures of the study variables are collected from the control group without osteoporosis instruction. Analysis of covariance was performed to test the hypotheses. The results of ANCOVA showed that the osteoporosis knowledge of the elderly women receiving osteoporosis instruction was significantly greater than the elderly women without such instruction ($p<0$). Likewise, strength of susceptibility and the benefits of calcium intake belief and self- efficacy of calcium intake of elderly women with osteoporosis instruction was significantly greater than those without osteoporosis instruction($p<0.05$).

The fourth objective was to determine the association between the level of knowledge on osteoporosis and its prevention among perimenopausal women and their selected demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

In this study the investigator found that there was no significant association between the level of knowledge with demographic variables regarding osteoporosis and its prevention among perimenopausal women.

The findings congruent with Singer AJ et al. 2006 did a descriptive study in the menopausal women to determine the knowledge of osteoporosis and its prevention. It includes the causes, prevention and management of osteoporosis. Knowledge of specific guidelines ranged from 21-90%. Subjects especially lacked the knowledge of the dietary intake of calcium to prevent osteoporosis. Only 28% have awareness about the menopausal osteoporosis and 12% are aware of the preventive measures of osteoporosis. The study concluded that knowledge is unaffected by age, education, occupation, income, marital status, dietary habits. Further education is needed to improve the knowledge of first aid practices.

The fifth objective was to determine the association between the attitude on osteoporosis and its prevention among perimenopausal women and their selected demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

In this study the investigator found that there was no significant association between the attitude and the demographic variables regarding osteoporosis and its prevention. The findings are congruent with Brigham conducted a study in Women's Hospital, USA. The objective of the study was to assess older adults' knowledge and beliefs regarding osteoporosis and its prevention, in order to develop effective osteoporosis health education messages and materials. The sample were 15 older adult volunteers. The tool used were semi structured one-on-one interviews, a standard interview guide was developed and used for all interviews, which were audio taped and transcribed. The result found that the term "osteoporosis" was well recognized, but many participants had only a fragmented understanding of its meaning. All participants identified osteoporosis as a serious condition, but many

did not perceive themselves to be at personal risk for developing the condition. The study concluded that Osteoporosis awareness is high, but the older adults interviewed had an incomplete understanding of the condition and the knowledge and beliefs were unaffected by age, socio economic status, gender .This could hinder efforts to improve prevention and treatment of osteoporosis.

**Summarizing up of all the Research Findings**

The research hypothesis (H1) there is significant increase in the level of knowledge of perimenopausal women after video assisted teaching programme regarding osteoporosis and its prevention.

The research hypothesis(H2) there is significant increase in the attitude level of perimenopausal women after video assisted teaching programme regarding osteoporosis and its prevention.

The research hypothesis (H0) there is no significant association between pretest knowledge and attitude regarding osteoporosis and its prevention among perimenopausal women with selected demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

# CHAPTER VI

## Summary, Conclusion, Nursing Implications, Limitations and Recommendations

This chapter deals with the summary of the study and conclusion drawn from the study. It also explains the scope and delimitations of the study for different areas like Nursing education, Nursing administration and Nursing research.

### Summary

This study was undertaken to assess the effectiveness of video assisted teaching programme on knowledge and attitude of perimenopausal women regarding postmenopausal osteoporosis and its prevention in the selected areas of Marappadi at Kulasekharam, KanyaKumari.

In the present study one group pretest and posttest design was used. Conceptual framework used for the study was J.W Kenny's open system model.

### Objectives of the study

1. To assess the knowledge of perimenopausal women regarding Osteoporosis and its prevention
2. To assess the attitude of perimenopausal women regarding Osteoporosis and its prevention.
3. To evaluate the effectiveness of video assisted teaching on the knowledge and attitude on osteoporosis and its prevention among perimenopausal women after the video assisted teaching programme.
4. To determine the association between the knowledge and attitude of perimenopausal women regarding Osteoporosis and their selected socio-

demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

5. To determine the association between the attitude of perimenopausal women regarding Osteoporosis and their selected socio-demographic variables such as age, education, occupation, income, marital status, dietary habits, lifestyle, monthly family income and exposure to sunlight.

**Distribution of the study subjects based on demographic variables:**

**Hypotheses**

**$H_1$ :** There is significant increase in the posttest knowledge score of perimenopausal women regarding osteoporosis and its prevention after video assisted teaching programme.

**$H_2$:** There is a significant increase in the posttest attitude score of perimenopausal women regarding osteoporosis and its prevention after the video assisted teaching programme.

**$H_3$ :** There is a significant association between the pretest knowledge regarding osteoporosis and its prevention and the selected socio-demographic variables such as age, education, occupation, marital status, dietary habits, lifestyle, monthly family income and period of exposure to sunlight.

**$H_4$** : There is a significant association between the pretest attitude regarding osteoporosis and its prevention and the selected socio-demographic variables such as age, education, occupation, marital status, dietary

habits, lifestyle, monthly family income and period of exposure to sunlight.

A pre experimental one group pretest post test design was found to be suitable for this study. The setting of the study was the conducted in the rural areas of Marappadi, Arumanai Panchayat.

The tool for the study had three parts. The first part of the tool consists of demographic variables. The second part of the tool consists of structured knowledge questionnaire on osteoporosis and its preventive measures. The third part of the tool consists of the attitude scale regarding osteoporosis.. the researcher selected the samples by purposive sampling technique. The population of the study was 50 perimenopausal women in Marappadi, Arumanai panchayat. The period of the study was one month.

The collected data were analysed based on descriptive and inferential statistics according to the above said objectives.

The pilot study proved that the tool and design were appropriate.

**Major findings**

The pretest knowledge score was 9.32 and pretest attitude score was 9.18. The posttest knowledge score was 16.68 and posttest attitude score was 17.48, indicating the audio and video assisted teaching programme improved both the knowledge and attitude level. The value calculated for the difference of pretest and post test is statistically significant. The Table value found to be 2.009 at $P<0.05$ level of significance for both knowledge and attitude level. This showed that there was a significant increase in the knowledge level and attitude level.

Chi square test was used to analyze the association between the demographic variables with pretest knowledge score and attitude score. There is no association between knowledge and attitude with the demographic variables such as age, education, religion, marital status, number of children, food habits, other life style habits, occupation, monthly family income and sunlight exposure.

**Conclusion**

The study reveals that the level of knowledge and attitude on osteoporosis and its prevention has improved after video assisted teaching programme at 0.05 level of significance. Knowledge on osteoporosis and its prevention will help the perimenopausal women understand about the impact of osteoporosis on the quality of life and the financial consequences and understand the measures to prevent the risk of osteoporosis. Based on the findings, the study concludes that teaching programme like video assisted teaching programme will improve the knowledge and attitude in osteoporosis and its prevention among perimenopausal women.

**Nursing implications**

The findings of the study reveal the implication on Nursing Education, Nursing practice, Nursing Administration, Nursing Research.

**Nursing Education**

1. Inservice education can be given to the nursing personnel on the use of various methods of teaching while providing health education to perimenopausal women regarding osteoporosis and its prevention in order to capture their attention.

2. The Nursing students must be prepared to provide Health teaching by using various teaching methods.

3. Nurse educator when planning and instructing nursing students, should provide opportunities for the students to gain skill in teaching about osteoporosis and its prevention among perimenopausal women.

**Nursing practice**

1. Teach about the osteoporosis and its prevention to the perimenopausal women who are getting treatment from the hospital especially those women with a fracture and those who had undergone hysterectomy and oopherectomy, before discharge.

2. Nurses can use various technologies to capture the attention of perimenopausal women while providing health teaching on osteoporosis.

3. Nurses in gynaec ward, ortho ward, public health centres, can regularly plan for some teaching or demonstration programme regarding osteoporosis and its prevention .this creates more awareness among the perimenopausal women which also helps to reduce the risk of osteoporosis.

**Nursing administration**

The nurse administrator can encourage the nurses to provide Health teaching on osteoporosis and its prevention by using video assisted teaching programme which helps to improve the level of knowledge and attitude of perimenopausal women regarding osteoporosis and its prevention.

**Nursing Research**

1. The essence of research is to build up a body of knowledge. The effectiveness of the study in research field is verified by its ability by the nurses in the clinical settings.
2. The findings of the study motivate the Nurse researcher to conduct many studies related to osteoporosis and its prevention.
3. The researches in nursing field can initiate Evidenced based nursing practice.

**Limitations**

1. The study sample of periemnopausal women were 50 and hence generalization is not possible.
2. The data collection period was only 4 week.
3. The extraneous variables are controlled to some extent only.

**Recommendation**

**1.** A similar study can be replicated with randomization in selection of a large sample.

**2.** The study can be conducted by including more number of variables and different geographic locations.

**3.** Study can be done for long term basis to produce more outcomes.

**4.** Studies can be conducted to compare the effect of other different teaching methods on osteoporosis and its prevention.

**5.** Studies can be conducted with other interventions to produce more outcomes.

**6.** Encourage beginning researchers to conduct longitudinal study regarding osteoporosis.

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**APPENDIX A**

**LETTER SEEKING FOR EXPERT OPINION FOR CONTENT AND TOOL VALIDITY**


# SREE MOOKAMBIKA COLLEGE OF NURSING

PADANILAM WELFARE TRUST, V.P.M.HOSPITAL COMPLEX, PADANILAM,
KULASEKHARAM, K.K.DIST., TAMILNADU, PIN : 629 161.
**Phone : 04651 - 280745, 280742, 278250**
(Approved by Govt. of The Tamil Nadu & Recognised by Indian Nursing Council, New Delhi)


Date :

Lr. No :

**LETTER SEEKING EXPERT OPINION FOR TOOL VALIDITY**

Date :

To

Madam / Sir

Sub : M.Sc Nursing Programme – dissertation – Validation of study tool request –reg:

Ms/Mrs. **Shyni. V** a bonafide if II Year M.Sc Nursing student of Sree Mookambika College of Nursing is approaching you to obtain validation of study tool pertaining to her dissertation in practical fulfillment of the requirement for the degree of Master of Science in Nursing. **A study to assess the effectiveness of video-teaching programme on knowledge of osteoporosis and its prevention among perimenopausal women in selected community**

In this regard I request you to kindly extent possible technical guidance and support for successful completion of dissertation.

I enclosed here with a check list for your evaluation.

Thanking You

Yours Sincerely

PRINCIPAL

PRINCIPAL
Sree Mookambika College of Nursing
Kulasekharam-629 161

## APPENDIX B

## ETHICAL CLEARENCE CERTIFICATE

# SREE MOOKAMBIKA COLLEGE OF NURSING

*(Approved by the Government of Tamil Nadu & Recognised by Indian Nursing Council, New Delhi, Tamil Nadu state Nurses & Midwives Council, Chennai.)*
*Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.*

PADANILAM WELFARE TRUST, V.P.M.HOSPITAL COMPLEX, PADANILAM,
KULASEKHARAM, K.K.DIST., TAMIL NADU, PIN : 629 161.
Phone : 04651 - 280743, 280866, 280742, 280745

**ETHICAL COMMITTEE CLEARANCE**

*Date :* .....

*Lr. No.* **11.01.2014**

To

**Mrs. Shyni .V**

I Yr. M.Sc (N),

Sree Mookambika College of Nursing,

Kulasekharam.

**Ref : Research Topic**: A Study to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude of Perimenopausal osteoporosis and its prevention in Marappadi village at kulasekharam, Kanyakumari District.

**Sub :** Approval of the above reference study and its related documents

**Dear Shyni .V**

Ethics committee of Sree Mookambika College of Nursing , Kulasekharam reviewed and discussed the study proposal documents submitted by you related to the conduct of the above referenced study and its meeting held on 11.01.2014

The Following ethical committee Members were present at the meeting held on 11.01.2014

| NAME | PROFESSION | POSITION IN THE COMMITTEE |
|---|---|---|
| Prof. Mrs. Shanthi Letha | Nursing | Chair Person |
| Dr. Kani Raj Peter | Medical | Basic Medical Scientjst |
| Dr. T.C. Suguna | Nursing | Clinicians |
| Adv. Mohanan | Legal | Legal Expert |
| Prof. Mrs. Ajitha Rethnam | Nursing | Member Secretary |
| Dr. Preetha P.Nair | Management | Philosopher |
| Mr. Natarajan | Social | Medical Social Worker |
| Mrs. Latha | Lay Person | Community Person |

After due ethical and scientific consideration, the Ethics committee has approved the above presentation submitted by you.

Regards,

**Mrs. SANTHI LETHA PhD (N)**

Ethics Committee – Chairperson,

Sree Mookambika College of Nursing,

V.P.M. Complex, Padanilam,Kulasekharam.

**Date : 11.01.2014**

**Place : Kulasekharam.**

## APPENDIX C

## LIST OF EXPERTS VALIDATED THE TOOL

1. **Dr. Rema.V.Nair M.D**., **D.G.O**
   Director,
   Sree Mookambika Institute of Medical Science,
   Kulasekharam .

2. **Prof. Dr.Mrs.T.C.Suguna M.Sc. (N), MA (socio) Ph.D**
   HOD, Obstetrics and Gynecological Nursing
   Sree Mookambika College of Nursing,
   Kulasekharam.

3. **Prof. Mrs. Kumutha M.Sc. (N),**
   Vice-Principal,
   C.S.I. Eliza Caldwell College Of Nursing
   Idayangudi.

4. **Mrs. Tarsis Henita. H. J. M.Sc. (N),**
   Associate Professor,
   C.S.I. College Of Nursing,
   Karakonam, Trivandrum.

5. **Mrs. Arzta Sophia M.Sc. (N)**
   Reader,
   Christian college of Nursing, Neyyoor.

**APPENDIX D**

**Muha;r;rpapy; gq;F ngWgtUf;fhd xg;Gjy; gbtk;**

**md;gpw;Fupa gq;FngWNthNu**

i\dp. V. vDk; = %fhk;gpfh nrtpypau; fy;Y}up KJfiy khztpahfpa ehd; gbg;gpd; xU gFjpahf ngz;fspy; vYk;G giu Nehiag;gw;wp tpopg;Gzu;T Vw;gLj;Jk; nghUl;L elj;jpa VATP nfhLj;j mjd;gyid Muha;r;rp nra;a cs;Nsd;. ,t; Ma;T ngz;fspy; vYk;GGiu Nehiaf;Fwpj;J tpopg;Gzu;T Vw;gLj;J cjTfpwJ.

,t;thuha;r;rpapy; ePq;fs; gq;fngw;W cq;fs; gjpy;fis cz;ikahfTk; ntspg;gilahfTk; $WkhW Nfl;Lf;nfhs;fpNwd;. cq;fs; gjpy;fs; ,ufrpakha; ghJfhf;fg;gLk; vd cWjpaspf;fpNwd;

ஆராயச்சியாளரின் கையொப்பம்

…… vDk; ehd; ,t;tha;tpy; fye;J nfhs;s rk;kjpf;fpNwd;.

**gq;FngWNthupd; ifnahg;gk;**

**APPENDIX E**

**DATA COLLECTION TOOL IN ENGLISH**

**SECTION:A**

**DEMOGRAPHIC VARIABLE**

**Name :**

**Sample No :**

**Place :**

**1.** Age in years

**a)** 30-35

**b)** 36-40

**c)** 41-45

**2.** Education:

a) Schooling

b) Undergraduate

c) Postgraduate

**3.** Religion:

a) Hindu

b) Christian

c) Muslim

**4.** Marital status:

a) Married

b) Unmarried

c) Widow

d) Separated

**5.** No.of children

a) No.of children

b) 1 or 2 children

c) No children

**6.** Dietary habits

a) Vegetarian

b) Non vegetarian

**7.** Habits:

a) Drinks more than 2 cups of coffee per day.

b) No bad habits like drinking alcohol / smoking

**8.** Occupation:

a) Coolie

b) Business

c) Employee

d) House wives

**9.** Monthly family income in rupees.

a) < 3000

b) 3001- 4000

c) 4001 – 5000

d) > 5000.

**10.** Do you expose to sunlight?

a) Yes b) no

If yes, specify the duration of exposure per day

a) More than 20 minutes /day

b) Less than 20 minutes / day

c) Time period is not significant.

**SECTION B**

**QUESTIONNAIRE**

Kindly place a tick mark against the option which you feel as correct.

1. What is meant by Osteoporosis?

   a) Thin bone

   b) Porous Bone

   c) Fractured Bone

2. Which is the hormone that slow down the pace of bone erosion in women?

a) Progresterone

b) Relaxin

c) Oestrogen

3. Which is the period that is beginning before 10 years to several months before the menopause is fully reached?

   a) Post Menopausal period

   b) Periomenopausal period

   c) Menopausal Period

4. What are the components that influence the bone building process?

   a) Vitamin A & Vitamin E

   b) Calcium, Vitamin D, Oestogen in women

   c) Vitamin B & Vitamin C

5. What is the main cause of osteroporosis in menopausal period?

   a) Drop in Vitamin C

   b) Drop in oestrogen

   c) Drop in Vitamin A

6. Who among the following people are at the risk of osteoporosis?

   a) Moderately built person

   b) Obese person

   c) Thin and small boned

7. Who among the following are at high risk of losing bone mass very quickly?

a) Highly active person

b) Sedentary person

c) Moderately active person

8. Which medication can cause osteoporosis on prolonged usage?

a) Aspirin

b) Paracetamol

c) Corticosteroids

9. Which condtion produces a stress related hormone cortisol that saps minerals from the bone?

a) Anger

b) Depression

c) Happiness

10. What is the recommended daily supplement of calcium ?

a) 1800 – 2300mg/day

b) 1500 – 1800mg/day

c) 1000 – 1200mg/day

11. What is the recommended Vitamin D for adults?

a) 400IU – 1000IU

b) 200IU – 300IU

c) 1000IU – 1200IU

12. What are the symptoms of osteoporosis?

a) Chronic Head ache and fever

b) Chronic Back Pain, hunch back, reduction in height

c) Joint stiffiness

13. Which among the following is the main complication of osteoporosis?

a) Frequent fractures

b) Frequent fever

c) Frequent abdominal pain

14. Hunch back may cause

a) Breathing difficulty

b) Bleeding

c) headache

15. which among the following will help in building bone as you age?

a) Swimming

b) Walking,stair climbing

c) Non-stress yoga

16. Which is the best option of milk and milk products recommended for the perimenopausal women?

a) Low fat skimmed milk

b) Whole milk

c) High fat content milk

17. Which of the following  fish foods are rich in calcium?

a) Salmon,sardines,mackerel

b) Squid,snailfish

c) Shrimp,tilapia

18. Which are the vegetarian foods that are good sources of protein?

a) Tomato, sweet potato,cucumber

b) Polished rice, refined flour

c) Beans,lentils,legumes,wholegram

19. Which among the following food items cause calcium depletion?

a) Soft drinks and carbonated drinks

b) Natural fruit juices

c) Cereals and pulses

20. What is the name of the scan for diagnosing osteoporosis?

a)MRI scan

b) US scan

c) DEXA scan

**KEY:**

1. **b**

2. **c**

3. **b**

4. **b**

5. **b**

6. **c**

7. **b**

8. **b**

9. **a**

10. **c**

11. **a**

12. **b**

13. **a**

14. **b**

15. **b**

16. **c**

17. **b**

**18. a**

**19. a**

**20. c**

## SECTION C

## ATTITUE SCALE

Kindly place a tick mark in the relevant column against each statement which you feel as appropriate.

| Attitude Scale | | | | |
|---|---|---|---|---|
| **Sl. No** | **Statement** | **Agree** | **No opinion** | **Disagree** |
| 1. | Women are more at risk of getting osteoporosis than men | | | |
| 2. | Hereditary is not a factor causing osteoporosis | | | |
| 3. | Diet low in calcium products causes osteoporosis | | | |
| 4. | Calcium rich foods contain | | | |
| 5 | Sunlight exposure is not much essential for maintaining healthy bone | | | |
| 6 | Excessive caffeine intake increases the risk of getting osteoporosis | | | |
| 7 | Regular active exercise prevents osteoporosis. | | | |
| 8 | Increasing age has no influence on susceptibility of developing osteoporosis | | | |
| 9 | Smoking increases the risk of getting osteoporosis | | | |
| 10 | Physically active persons are at less risk of getting osteoporosis. | | | |

**Key**

The statements 1, 3, 6, 7, 8 are positive and the scores are given below,

Agree – 2 No opinion – 1 Disagree – 0

The statements 2, 4, 5, 9, 10 are negative and the scores are given below,

Agree – 0 No opinion – 1 Disagree – 2

## gFjp – m

## Gs;sp tptug;gl;bay;

Gs;sp tptug; gl;bay; vd;gJ xU Ma;tpd; rupahd Kiwg;gb nra;jpfis toq;Ftjw;Fk;. NkYk; ,J jdp kdpjidg; gw;wp tptuq;fis njuptpg;gjhFk;

**ngh‹J Nfs;tpfs;**

cq;fSf;F rup vd;W Njhd;Wk; ,lj;jpy; [✓] milahskpLf.

**ngau;:** **khjpup vz;:**

**taJ:** **,lk;:**

1. taJ
   A. 30 Kjy; 35 tiu [ ]
   B. 36 Kjy; 40 tiu [ ]
   C. 41 Kjy; 45 tiu [ ]

2. fy;tp
   A. mbg;gilf;fy;tp [ ]
   B. cau; fy;tp [ ]
   C. KJepiy fy;tp [ ]

3. kjk;
   A. ,e;J [ ]
   B. fpwp];jtu; [ ]
   C. K];yPk; [ ]

4. jpUkz epiy
   A. jpUkz khdtu; [ ]
   B. jpUkzkhfhjtu; [ ]
   C. tpjit [ ]

5. Foe;ijfs;
   A. ,y;iy [ ]
   B. 2 Foe;ijfs; [ ]
   C. 2w;F Nkw;gl;l Foe;ijfs; [ ]

6. czT gof;fk;
   A. Gyhy; cz;zhjtu; [ ]
   B. Gyhy; cz;Zgtu; [ ]

C. fyg;GzT rhg;ggpLgtu; [ ]

7. gof;fq;fs;

A. fhgp ghdk; mjpfk; gUFk; gof;fk; [ ]

B. ve;j nfl;l gof;fKk; ,y;iy [ ]

8. Ntiy
A. $ypNtiy [ ]
B. tpahghuk; [ ]
C. mYtyf Ntiyf;fhuu; [ ]

D. ,y;yhs; [ ]

9. FLk;g khj tUkhdk;
A. < 3000 &gha; [ ]
B. 3001 – 5000 &gha; [ ]
C. 5001 – 8000 &gha; [ ]

D. 8000 &gha;f;F Nky; [ ]

10. jpdKk; clypy; #upa xsp fhl;LtJz;lh
A. Mk; [ ]
B. ,y;iy [ ]

Mk; vd;why; vj;jid kzp Neuk;

……..

i. 20 epkplj;jpw;Ff; Fiwthf [ ]

ii. 20 epkplj;jpw;F Nky; [ ]

iii. Fwpg;gpl;l Neuk; fpilahJ [ ]

# gFjp – M

## tpdhjhs;

vYk;Gg;Giu Neha; rk;ge;jkhd 25 tpdhf;fis cs;slq;fpa mwpTj;jpwd; tpdhj;jhs; nfhLf;fg;gl;Ls;sJ. xt;nthU rpdhf;fSf;fk; 4 tpilfs; nfhLf;fg;gl;Ls;sk. Me;j 4 Nfs;tpfspy; xd;W rupahdJ. kw;w %d;W tpilfSk; jtwhdit. Rupahd tpilf;F 1 kjpg;ngz;Zk; jtwhd tpilf;F 0 kjpg;ngz;Zk; nfhLf;fg;gLk;.

**cq;fSf;F rup vd;W Njhd;Wk; ,lj;jpy; [✓] milahskpLf.**

**tpdhf;fs;:**

1. vYk;Gg;Giu Neha; vd;why; vd;d?
   A. nky;ypa vYk;Gfs; [ ]
   B. rpW Jisfs; cs;s vYk;Gfs; [ ]
   C. vYk;G KwpT [ ]
   D. njupahJ [ ]

2. ngz;fspd; vYk;G mupg;igf; Fiwf;Fk; Rug;gp ePu; vJ?
   A. g;nwhn[];Nuhd; [ ]
   B. <];l;Nwh[d; [ ]
   C. wpNyf;]pd; [ ]
   D. njupahJ [ ]

3. ngz;fspd; khjtplha; KbtilAk; gj;J tUlj;jpw;F Ke;jpa fhyk;?
   A. ,Wjp khjtplha;f;F mLj;j fhyk; [ ]
   B. ,Wjp khjtplha;f;F Ke;ija fhyk; (ngupNkNdhgh];) [ ]
   C. ,Wjp khjtplha; fhyk; [ ]

4. vYk;Gfs; cUthf fhuzkhd $Wfs;?
   A. capu;rj;J E capu;r;rj;J B [ ]
   B. fhy;rpak;, capu;r;rj;J D [ ]
   C. capu;rj;J A capu;r;rj;J C [ ]
   D. njupahJ [ ]

5. khj tplha;f;F gpwF vYk;G Giu Neha; tuf; fhuzk;?

A. capu;rj;J C – d; FiwghL [ ]
B. <];l;Nwh[d; msT FiwT [ ]
C. capu;rj;J A – d; FiwghL [ ]

D. njupahJ [ ]

6. fPo;fz;ltw;wpt; vYk;Gg;Giu Nehapdy; mjpfk; jhf;fg;gLtJ ahu;?
A. kpjkhf cly;thF cs;stu; [ ]
B. mjpf vil cly; thF cs;stu; [ ]
C. nky;ypa ,Nyrhd vYk;Gfis cilatu; [ ]

D. njupahJ [ ]

7. fPo;fz;ltw;wpy; ahUf;F vYk;Gj; jpus; FiwT mjpfkhfj; jhf;fg;gLfpwJ?
A. kpj Ntiy nra;gtu; [ ]
B. cly; ciog;gpy;yhjtu; [ ]
C. mjpf Ntiy nra;gtu; [ ]

D. njupahJ [ ]

8. mjpf fhyk; gad;gLj;jpfhy; vYk;Gg;Giu Neha; tUtjw;F fhuzkhd kUe;J vJ?
A. Ghunrl;lNkhs; [ ]
B. ];buha;L fye;j kUe;Jfs; [ ]
C. M];gpupd; [ ]

D. njupahJ [ ]

9. ekJ vYk;gfspy; cs;s fdpkq;fis mupf;Fk; xU Rug;gp ePu;; ve;j epiyapy; Ruf;Fk;?
A. cw;rhfkpd;ik [ ]
B. kfpo;r;rp [ ]
C. Nfhgk; [ ]

D. njupahJ [ ]

10. jpdKk; ekf;Fj; njitahd fhy;rpak; msT vd;d?
A. 2500 – 2800 kp;fp/1ehs; [ ]
B. 1800 – 2300 kp;fp/1ehs; [ ]
C. 1500 – 2000 kp;fp/1ehs; [ ]

D. njupahJ [ ]

11. jpdKk; ekf;f njitahd itl;lkpd; D msT vd;d?
A. 400 – 800 ,U/1ehs;; [ ]
B. 200 – 300 ,U/1ehs [ ]
C. 1000 – 1200 ,U/1ehs; [ ]

D. njupahJ [ ]

12. vYk;Gg;giu Nehapd; mwpFwpfs; ahit?
A. tpiwg;ghd re;jp [ ]
B. njhlu;r;rpahd KJFtyp [ ]
C. njhlu;r;rpahd jiytyp, fha;ry; [ ]

D. njupahJ [ ]

13. vYk;Gg;Giu Nehapdhy; Vw;gLk; Kf;fpa rpf;fy;fs; vJ?
    A. njhlu;r;rpahd vYk;G KwpT [ ]
    B. njhlur;rpahd tapw;Wtyp [ ]
    C. njhlu;r;rpahd fha;r;ry; [ ]

    D. njupahJ [ ]

14. gpd;$dy; cl;Gw cWg;Gfspy; Vw;gLj;Jk; mOj;jj;jpdhy;; cz;lhFk; tpisT?
    A. xUtUila %r;RtpLk; Mw;wy; gOjilAk; [ ]
    B. uj;jg;Nghf;F Vw;gLk; [ ]
    C. jiytyp Vw;gLk; [ ]

    D. njupahJ [ ]

15. tajhd gpwFk; vYk;Gfs; gykhf cjTk; gapw;rpfs; vit?
    A. elj;jy;, gb VWjy; [ ]
    B. ePr;ry;, irf;fps; Xl;Ljy; [ ]
    C. ,Nyrhd Nahfh gapw;r;rp [ ]

    D. njupahJ [ ]

16. Ke;;ija ,Wjp khjtplha; fhyj;jpy; ngz;fs; rhg;gpl Ntz;ba ghy; kw;wk; ghy; nghUl;fs; vit?
    A. nfhOg;G mjpfk; fye;j ghy; [ ]
    B. rhjhuz ghy; [ ]
    C. nfhOg;G Fiwe;j ghyhil ePf;fg;gl;l ghy; [ ]

    D. njupahJ [ ]

17. fhy;rpak; mjpfk; fye;j kPd; tiffs; ahit?
    A. fzit, ej;ij [ ]
    B. Nfhiu kPd;, kj;jp kPd;, maiy [ ]
    C. fupkPd; [ ]

    D. njupahJ [ ]

18. fha;fwp tiffspy; Gujr;rj;J mjpfKs;s czT vJ?
    A. gPd;];, mtiu ,dk;, KO jhdpq;fs; [ ]
    B. jf;fhsp, rPdpf;fpoq;F, nts;supf;fha; [ ]
    C. jtpL fise;j muprp, mjpdkhf J}a;kpj;j khT tiffs; [ ]

    D. njupahJ [ ]

19. ekJ clypypUe;J fhy;rpak; msitf; Fiwf;Fk; czT tiffs; ahit?
    A. nraw;if Fspu;ghdq;fs; Nrhlh fye;j Fspu;ghdq;fs; [ ]
    B. ,aw;if gourq;fs; [ ]
    C. jpid tiffs;, gaWtiffs; [ ]

    D. njupahJ [ ]

20. vYk;G Giu Neha; fz;Lgpbf;f gad;gLj;Jk; ];Nfd; vJ?
    A. MRI ];Nfd; [ ]
    B. US ];Nfd; [ ]
    C. DEXA ];Nfd; [ ]
    D. njupahJ [ ]

## gFjp - ,

### kdg;ghL msT Nfhy;

cq;fSf;F rup vd;W Njhd;Wk; ,lj;jpy; [✓] milahskpLf

A. xg;G nfhs;fpNwd;
B. ve;j fUj;Jk; ,y;iy
C. xg;G nfhs;stpy;iy

| vz; | mwpf;iffs; | M | M | , |
|---|---|---|---|---|
| 1. | Mz;fis tpl ngz;fsplk; vYk;Gg;Giu Neha; mjpfkhff; fhzg;gLfpwJ | | | |
| 2. | vYk;Gg;Giu Neha; guk;giu Neha; my;y | | | |
| 3. | fhy;rpak; Fiwe;j czT cl;nfhs;Stjhy; vYk;Gg;Giu Neha; Vw;gl tha;g;G cs;sJ | | | |
| 4. | Mjpf fhy;rpak; mlq;fpa czT nghUspy; mjpfk; nfhy];l;Nuhy; cz;L | | | |
| 5. | 40 tajpw;F Nky; vYk;G ];Nfd; vLg;gJ vYk;Gg;Giu Nehia Kd;djhf mwpa cjthJ | | | |
| 6. | MNuhf;fpakhd vYk;GfSf;F #upa xsp nfhs;tJ Njit | | | |

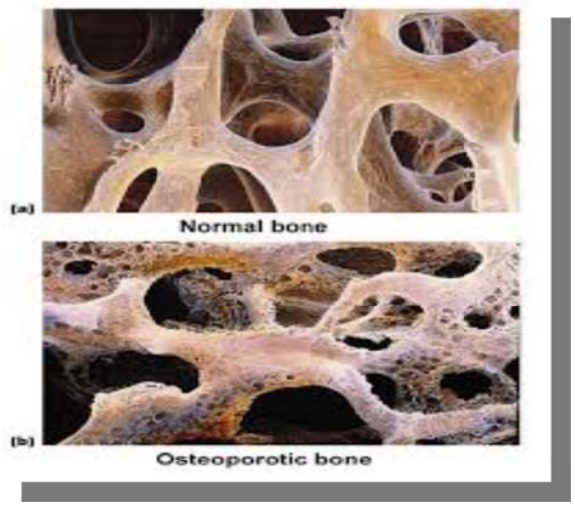
| | | | | |
|---|---|---|---|---|
| | fpilahJ | | | |
| 7. | mjpfkhf fhg;gp nghUl;fs; cl;nfhs;Stjhy; vYk;G Giu Neha; tutha;g;G cs;sJ | | | |
| 8. | tof;fkhd RWRWg;ghd clw;gapw;rpfs; nra;tJ vYk;G Giu Nehia jLf;f cjTk; | | | |
| 9. | taJ $Ljyhy; vYk;G Giu Neha; tUtjw;fhd Mgj;Jk; mjpfkhfpd;wJ | | | |
| 10. | RWRWg;ghd cly; ciog;G cs;sth;fSf;F vYk;G Giu Neha; tutha;g;G cs;sJ | | | |

# APPENDIX F

## *TEACHING MODULE*

## *ON*

## *OSTEOPOROSIS AND ITS PREVENTION*



| | | |
|---|---|---|
| **TOPIC** | **:** | **OSTEOPOROSIS AND ITS PREVENTION** |
| **GROUP** | **:** | **PERIMENOPAUSAL WOMEN** |
| **TIME** | **:** | **30 MINUTES** |
| **TEACHING METHODS** | **:** | **VIDEO ASSISTED LECTURE METHOD** |
| **AV AIDS** | **:** | **ELECTRONIC CD ROM** |
| **INSTRUCTOR** | **:** | **INVESTIGATOR** |

**GENERAL OBJECTIVE**

At the end of the video assisted teaching programme, the perimenopausal women who had attended the class will be able to gain adequate knowledge regarding osteoporosis and its prevention.

**SPECIFIC OBJECTIVE**

At the end of the video assisted teaching programme the perimenopausal women will be able to :

- define osteoporosis
- state the incidence of osteoporosis
- mention the risk factors of osteoporosis
- list the types of osteoporosis
- enlist the causes of osteoporosis
- observe the pathophysiology of osteoporosis
- describe the management of osteoporosis
- point out the symptoms of osteoporosis
- state the complications of osteoporosis

❖ recall the preventive aspect of osteoporosis

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
|---|---|---|---|---|---|
| 2 | | **Introduction**<br>Osteoporosis is a disease of the bones. Osteoporosis means porous bone. It happens when the person loses too much bone, make too little bone or both. As a result the bones become weak and may break.<br>In the perimenopause itself both the quality and quantity of bone decline rapidly resulting in a dramatic increase in the risk of fracture in postmenopausal women. Bones are healthy living tissues that need physical activity, calcium and vitamin D to stay healthy and strong.<br>**Definition**<br>***Osteoporosis:*** | The investigator introduce the topic, the group listens | | What do you meant by osteoporosis |
| 2 | The perimenopausal women are able to define osteoporosis | Osteoporosis is a disease in which bones become fragile and weak, due to increased calcium resorption, leading to an increased risk of fractures (breaking bones). | The investigator defines |  | How will you define osteoporosis |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| 5<br><br>5 | and perimenopause.<br><br>The perimenopausal women state the incidence of osteoporosis. | ***Perimenopause:***<br>Perimenopause begins anywhere from10 years to several months before menopause is fully reached.This is marked by irregular periods. Perimenopause usually occurs between age 35 and 45. This phase ends when the women have no periods for 12 months. At this time she has reached menopause. A woman in the period of perimenopause is called perimenopausal woman.<br><br>**Incidence**<br>Based on 2001 census, approximately 160 million Indians are above the age of 50 and about 29% of women are osteoporotic. The total affected population is about 25 million. According to estimates, as many as 25 million Indians are likely to be affected by osteoporosis. In fact, in India osteoporotic fractures may occur at a younger age than in the West. Recent research and studies have pointed out to widespread vitamin D deficiencies across India. The high prevalence of vitamin D deficiency is a major factor in the poor bone health of Indians. Poor sunlight exposure and a vitamin D-deficient diet are some obvious causes.<br><br>**Risk factors** | osteoporosis<br>The group listens<br><br>The investigator explain the causes of osteoporosis |  | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | The perimenopausal women are able to mention the risk factors of osteoporosis | Some risk factors for osteoporosis are cannot be modified. They are as follows:<br>**Gender:** Women are much more likely to develop osteoporosis than are men.<br>**Age:** The older one get, the greater is the risk of osteoporosis.<br>**Race:** White or of Asian descent.<br>**Family history.** Having a parent or sibling with osteoporosis puts one at a greater risk.<br>• **Frame size.** Men and women who have small body frames tend to have a higher risk because they may have less bone mass to draw from as they age.<br>• Personal history of fracture as an adult<br>• Poor general health<br>• Smoking tobacco<br>• Low body weight, less than 127 pounds<br>• Estrogen deficiency<br>• Early menopause, before age 45<br>• Surgical removal of the ovaries before age 45<br>• Prior to menopause, having a time in your life when you went more than a year without a | |  <br>  | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | menstrual period<br>• Taking medical therapy that lowers estrogen levels, such as for breast cancer or endometriosis<br>• Lifelong low calcium intake<br>• Alcoholism<br>• Poor vision despite correction, like wearing glasses<br>• Falling<br>• Inadequate physical activity<br>Risk factos- disease condition:<br>• Hyperparathyroidism, having an overactive parathyroid gland<br>• Hyperthyroidism, having an overactive thyroid gland<br>• Severe liver disease<br>• Kidney failure<br>• Pituitary tumor<br>• Adrenal disease<br>• Malabsorption<br>• Multiple sclerosis<br>• Rheumatoid arthritis | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | • Multiple myeloma<br>• Lymphoma<br>• Leukemia<br>• Diabetes<br>Risk factors- medications:<br>• Seizure medication<br>• Immunosuppressive drugs<br>• Steroids (prednisone, hydrocortisone, dexamethasone)<br>• Heparin<br>• Lithium<br>• Excess Thyroxine, thyroid replacement<br>• Proton pump inhibiting drugs can reduce the absorption of calcium from the stomach and long term use of these drugs can significantly increase the risk of an osteoporosis-related fracture.<br>• Low body weight and weight loss is associated with greater bone loss and increased risk of fracture.<br>Other risk factors: | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| 3 | The perimenopausal women are able to list the types of osteoporosis. | • Some young females, particularly those training for elite athletic competition, exercise too much, eat too little, and consequently experience amenorrhea which makes them at risk for low bone mass and fractures.<br>• After an initial low trauma fracture from a simple fall, both older men and women have an increased equivalent risk of all types of subsequent fractures, especially in the next 5-10 years.<br>• Middle-aged and older men and women with annual height loss >0.5 cm are at increased risk of hip and any fracture.<br>• Physical inactivity and a sedentary lifestyle as well as impaired neuromuscular function (e.g., reduced muscle strength, impaired gait and balance) are risk factors for developing fragility fractures .<br>• Smoking can lead to lower bone density and higher risk of fracture and this risk increases with age .<br>• A high intake of alcohol confers a significant risk of future fracture (e.g., over 4 units of alcohol/day can double the risk of hip fracture) . | |  | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| 2 | The perimenopausal women are able to list the causes of osteoporosis | The risk of vertebral and hip fractures in men increases greatly with heavy alcohol intake, particularly with long term intake.<br>**Types**<br>**Primary Osteoporosis**<br>Primary Osteoporosis occurs most commonly in women after menopause and during the perimenopausal period, which is the transition in to menopause, in which the ovaries gradually begin to produce less estrogen.<br>**Secondary Osteoporosis**<br>Secondary Osteoporosis is caused by medication such as corticosteroids(prednisone) or due to chronic illness such as anorexia nervosa(an Eating disorder that may leadto malnutrition), and due to too much of exercise- women who exercise excessively may lose their menstrual cycle and the normal production of oestrogen by the ovaries may stop<br>**Causes**<br>The bones in our body are constantly being broken down and replaced with new bones. This bone building cycle takes about 100 days and is influenced by the hormones produced in our body. Osteoporosis occurs | |  <br>  | What are the causes of osteoporosis? |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | when the bone tissue and minerals are lost faster than the bone is replaced.<br><br>➢ Family history and body type:<br>The risk of osteoporosis is greater for individuals with elderly relatives who have had a bone fracture, especially if it is a parent who had a hip fracture. People who are thin and small boned also have a higher risk of osteoporosis.<br>➢ Life-style factors:<br>Life-style factors such as smoking and excessive drinking, taking specific medications(such as corticosteroids) or having certain conditions(medical) such as primary parathyroidism, rheumatoid arthritis, may also contribute to bone loss. People with type 2 diabetes mellitus are more likely to suffer a hip or shoulder fracture than those without diabetes.<br>**Hormone levels**<br>Osteoporosis is more common in people who have too much or too little of certain hormones in their bodies. Examples include:<br>**Sex hormones.** The reduction of estrogen levels at menopause is one of the strongest risk factors for | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| 6 | | developing osteoporosis. Women may also experience a drop in estrogen during certain cancer treatments. Men experience a gradual reduction in testosterone levels as they age. And some treatments for prostate cancer reduce testosterone levels in men. Lowered sex hormone levels tend to weaken bone.<br><br>**Thyroid problems.** Too much thyroid hormone can cause bone loss. This can occur if your thyroid is overactive or if you take too much thyroid hormone medication to treat an underactive thyroid.<br>**Other glands.** Osteoporosis has also been associated with overactive parathyroid and adrenal glands.<br>**Dietary factors**<br>Osteoporosis is more likely to occur in people who have:<br>• **Low calcium intake.** A lifelong lack of calcium plays a major role in the development of osteoporosis. Low calcium intake contributes to diminished bone density, early bone loss and an increased risk of fractures.<br>• **Eating disorders.** People who have anorexia are at higher risk of osteoporosis. Low food intake can reduce the amount of calcium ingested. In women, | | | What are the symptoms and complication of osteoporosis. |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| 5 | | anorexia can stop menstruation, which also weakens bone.<br>• **Gastrointestinal surgery.** A reduction in the size of your stomach or a bypass or removal of part of the intestine limits the amount of surface area available to absorb nutrients, including calcium.<br>**Steroids and other medications**<br>Long-term use of corticosteroid medications, such as prednisone and cortisone, interferes with the bone-rebuilding process. Osteoporosis has also been associated with medications used to combat or prevent:<br>• Seizures<br>• Depression<br>• Gastric reflux<br>• Cancer<br>• Transplant rejection<br>**Lifestyle choices**<br>Some bad habits can increase your risk of osteoporosis. Examples include:<br>• **Sedentary lifestyle.** People who spend a lot of time sitting have a higher risk of osteoporosis than do their more-active counterparts. Any weight-bearing exercise is beneficial for your bones such as walking, running, jumping, dancing and weightlifting seem | | | What are the management of osteoporosis. |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | The perimenopausal women are able to observe the pathophysiology of osteoporosis. | particularly helpful for creating healthy bones.<br>• **Excessive alcohol consumption.** Regular consumption of more than two alcoholic drinks a day increases your risk of osteoporosis, possibly because alcohol can interfere with the body's ability to absorb calcium.<br>• **Tobacco use.** The exact role tobacco plays in osteoporosis isn't clearly understood, but researchers do know that tobacco use contributes to weak bones<br>**Complication:**<br>• Bone fractures, particularly in the spine or hip, are the most serious complication of osteoporosis. Hip fractures often result from a fall and can result in disability and even death from postoperative complications, especially in older adults.<br>• In some cases, spinal fractures can occur even if you haven't fallen. The bones that make up your spine (vertebrae) can weaken to the point that they may crumple, which can result in back pain, lost height and a hunched forward posture.<br>➢ Drop in oestrogen: | The investigator describes the symptoms and complication of | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | The perimenopausal women is able to point out the symptoms of osteoporosis.<br><br>The perimenopausal women are able to state the complication of osteoporosis<br><br>The | Oestrogen plays a major role in bone repair process.<br>➢ Lack of exercise:<br>Aperson who is inactive, loses bone mass very quickly and is high risk for Osteoporosis.<br>➢ Lack of calcium:<br>Recommended amount of vitamins and minerals along with calcium and vitamin D are veryimportant in the maintenance of healthy and strong bones. The elemental calcium required during midlife is 1000mg, but the need rises to1500 mg to 2000 mg when the women enters the perimenopausal period<br>**Pathophysiology:**<br>Menopause is characterized by the loss of estrogen production by the ovaries. This may occur by natural means or by the surgical removal of both ovaries. This loss of estrogens accelerates bone loss for a period ranging from 5 to 8 years. In terms of bone remodeling the lack of estrogen enhances the ability of osteoclasts to absorb bone. Since the osteoblasts (the cells which produce bone) are not encouraged to lay down more bone, the osteoclasts win and more bone is lost than is produced.<br>**Symptoms and complications** | osteoporosis<br><br>The investigator explains the management of osteoporosis | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | perimenopausal women describe the management of osteoporosis.<br><br>Recall the preventive aspect of osteoporosis | • The main symptoms and complications of. Back pain, caused by a fractured or collapsed vertebra<br>• Loss of height over time<br>• A stooped posture<br>Fracture bones in wrists, hip and back. Hip fractures are a particular problem for older women – they are usually a result of tripping or falling. However, you can fracture any bone in your body. This may result in pain, disability and loss of independence, a high stooped posture may disturb the respiratory system and causes difficulty in breathing<br>**Diagnosis**<br>There are several effective and relatively quick tests that measure BMD(Bone Mineral Density).Bone density measurement by a method called DEXA(Dual Energy X-ray Absorptiometry) For a bone densitometry exam, you will lie on your back on the scanning table as scans are taken of your spine and hip.The scan is non-invasive and takes about 10 minutes.<br>**Treatment**:<br>Treatment of Osteoporosis is aimed at preventingor reducing bone fractures and maintaining or increasing bone density. There are several treatments for | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | osteoporosis, but prevention is still very important.<br>• Calcium supplement of 1000mg to 1200mg.<br>• Recommended vitamin D 400IU to 1000 IU for adults without osteoporosis and 800 IU to 2000 IU for both adults over the age of 50 and people with osteoporosis.<br>• Recommended daily weight bearing exercises. Biphosphonates group medications slow down bone loss and help repair bone, reducing the chance of fracture.<br>• Selective oestrogen receptor modulators (SERMS Eg:raloxifene). These may also used to treat and prevent osteoporosis in women.<br>• Calcitonin, a hormone naturally produced by the thyroid gland and it has been shown to strengthen the bone.<br>• Hormone replacement therapy(HRTs); a variety of HRT are available for women who have reached menopause.<br>• Parathyroid hormone analogues: This class of medication builds new bone faster than it breakdown.<br>• All these medications should be taken under the | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | prescription of medical professional only.<br>**Prevention of osteoporosis:**<br>By improving the life style and the quality of life, the bone mass density can be improved and thus osteoporosis can be prevented. Some of the preventive aspect of osteoporosis is:<br>**Diet** :<br>• Drink milk(low fat skim milk); milk and milk products are healthy source of calcium needed to build strong bones.<br>• Include fish: Sodium, sardines, eaten with their bones is rich in calcium. Mackerel and other oily fish are rich in vitamin D.<br>• Green leafy vegetables: green leafy vegetables have lots of calcium, potassium and vitamin K which helps to block the calcium loss from the bones.<br>**Protein:**<br>• Body composition, changes after middle age, including increases in fat mass and decreases in muscle mass. Protein intake can make a difference. Studies have found that participants with the highest protein intake lost 40% less lean mass than those with the lowest protein intake. Lower protein intake | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | is associate with the loss of BMD at the hip and spine.Adequate calcium intake is necessary in order for the beneficial effect of protein on BMD to be realized.<br>• Protein is found in meat, fish, dairy products, eggs. Good vegetarian sources of protein are beans, lentils and legumes, soy products, nuts, and other whole grains .<br>**Acid base balance of the diet:**<br>• Acidic environment has negative effects on preservation of bone. Acidosis can occur when the intake of acid –producing foods, such as cereal grain and protein, is not balanced by enough alkali producing fruits and vegetables. Diets rich in fruit and vegetables are associated with higher BMD and or lower propensity for bone loss. To balance the need for protein, your dietary acid load can be lowered by decreasing the intake of cereal grains, while increasing the intake of cereal grains, while increasing the intake of fruits and vegetables.<br>**Avoid soft drinks and alcohol:**<br>• Many soft drinks and certain other carbonated soft drink contain phosphoric acid, which can increase calcium excretion in urine. | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | **Exercise:**<br>• Getting with a regular program of weight bearing exercise helps to stop further bone loss.Exercise for at least 30 minutes three times a week. Try walking, running, straining etc.<br>• Besides maintaining bone strength, increase muscle mass in order to improve muscle function, and to maintain good balance and strength. Weak muscles and poor balance can contribute to falls and fracture.<br>• The positive effect of exercise on bone is dependent upon both the type of exercise and the intensity. Resistance or muscle strengthening exercise becomes even more important as one ages. While it is difficult to build bone mineral after adulthood, exercise has been shown to lead to modest increases in bone mineral after adulthood, exercise has been shown to lead to modest increase in bone mineral density(BMD) of around 1-2%.<br>• Avoid negative lifestyle habits and maintain a healthy weight:<br>• Avoid smoking and alcohol. Maintain a healthy weight.<br>• Being underweight is associated with greater bone loss and increased risk of fracture.maintain a heathy weight | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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| | | of bmi ranging from 18.5 to 25kg/sq.m<br><br>**Summary:**<br>Till now we had seen about what is meant by osteoporosis, its incidence, the risk factors, types, causes, pathophysiology, management, the symptoms, complication, and preventive methods of osteoporosis.<br><br>**Conlusion**<br>Osteoporosis is a common problem that causes bones to become abnormally thin, weakened, and easily broken (fractured). Women are at a higher risk for osteoporosis after menopause due to lower levels of estrogen, a female hormone that helps to maintain bone mass. Fortunately, preventive treatments are available that can help to maintain or increase bone density<br><br>**Recapitulation**<br>How will you define osteoporosis?<br>What is theincidence of osteoporosis?<br>What are the risk factors of osteoporosis?<br>What are the causes of osteoporosis?<br>What are the types of osteoporosis? | | | |

| Time | Specific Objectives | Content | Teaching Activity/ Learning Activity | A.V. Aids | Evaluation |
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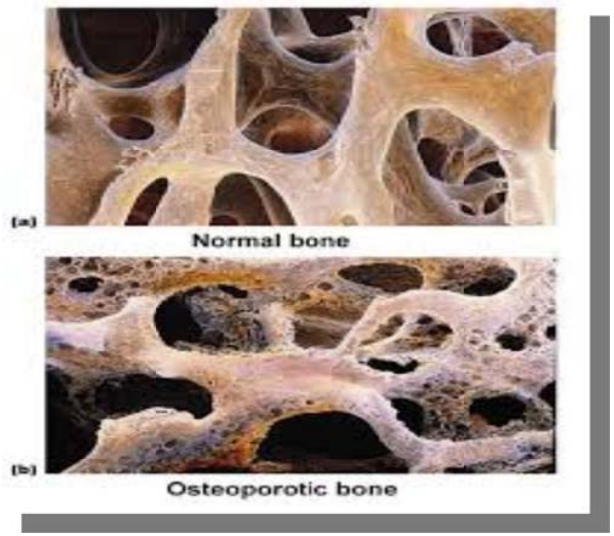
| | | How will you explain the causes of osteoporosis?<br>What are the symptoms of osteoporosis?<br>What are the complication of osteoporosis?<br>What are the methods that should be followed to prevent osteoporosis?<br><br>**Reference:** | | | |

# APPENDIX F

## fw;gpj;jy; khjpup

## vYk;G GiuNehiaAk; mjid jLf;Fk; KiwfSk;




**jiyg;G** : vYk;G GiuNehiaAk; mjid jLf;Fk; KiwfSk;

**fhyk;** : 30 epkplq;fs;

**FO** : Ke;ija ,Wjp khjtplha;fhy ngz;fs;

**,lk;** : khwg;ghb fpuhkk;

FyNrfuk;

**fw;gpj;jy; Kiw** : fhl;rpAld; $ba fw;gpj;jy;

**fw;gpj;jy; cgfuzq;fs;** : tPbNah Gifg;glq;fs;

**nghJthd Nehf;fq;fs;** : nghJthd cjtpAld; $ba fw;gpj;jy; Kiwapdhy; Ke;ija ,Wjp khjtplha; ngz;fSf;fhd tFg;gpy; vYk;G Giu Nehiaf;Fwpj;Jk; mij jLf;Fk; Kiwfisg;gw;wpAk; ghlNtis ,Wjpapy; mwpe;J nfhs;sjy;

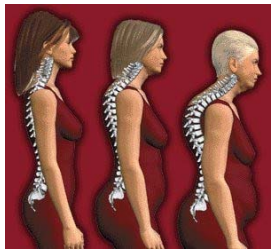
## Fwpg;gpl;l Nehf;fq;fs;

**Xyp xsp fUtpapd; cjtpAld**;

1. vYk;G Giu Nehia gw;wp njupe;J nfhs;sy;
2. vYk;G Giu Nehapd; epfo;itf; Fwpj;j $w KbfpwJ
3. vYk;G Giu Nehapd; Mgj;j fhuzpfis gw;wp njupe;J nfhs;sy;
4. vYk;G Giu Neha; tUtjw;fhd fhuzq;fs; vd;d vd;W gl;baypl KbfpwJ
5. vYk;G Giu Nehia jLf;Fk; Kiwfisg;gw;wp mwpe;J nfhs;Sjy;

6. vYk;G Giu Nehapdhy; Vw;gLk; Fog;gq;fisg;gw;wp njupe;Jnfhs;Sjy;

| Fwpg;gpl;l nehf;fk; | cs;slf;fk; | fhyk; | fw;gpj;jy; fw;wy; bray;ghL | kjpg;gPL |
|---|---|---|---|---|
| vYk;G Giu Nehia gw;wp njupe;J nfhs;sy; | **தலைப்பை அறிமுகப்படுத்துதல்**<br>**அறிமுகம்:-** எலும்புகளை தாக்கும் ஒருவகையான நோய் எலும்பு புரை நோய். எலும்புபுரை நோய் என்றால் சிறு துளைகள் உள்ள எலும்பு இந்த நோயினால் எலும்புகள் உடைந்து நோயாளியின் தன்மை அதிக கடினமானதாகிவிடும்.<br><br>**வரையறை:-**<br>**எலும்பு புரைநோய்:-**<br>எலும்பு புரைநோய் என்பது எலும்புகளை வலுவிழக்கச் செய்யும் ஒரு நோயாகும். இதன் மூலம் அதிகமான் எலும்பு முறிவுகள் வரவாய்ப்புண்டு. | 3 epkplq;fs ; |  | vYk;Ggiu Neha; vd;why; vd;d? |

| Fwpg;gpl;l nehf;fk; | cs;slf;fk; | fhyk; | fw;gpj;jy; fw;wy; bray;ghL | kjpg;gPL |
|---|---|---|---|---|
| vYk;G Giu Nehapd; epfo;itf; Fwpj;j $w KbfpwJ | **பெரிமெனோபஸ் (இறுதி மாதவிடாய்க்கு முந்தைய காலம்):**<br>பெண்களின் மாத விடாய் முடிவடையும் 10 வருடத்திற்கு முந்தைய காலம் இறுதி மாதவிடாய்க்கு முந்தைய காலம் ஆகும். 35 வயது முதல் 46 வயது முடிய இடைப்பட்ட கால அளவே பெரிமெனோபஸ் காலம் ஆகும். இந்த கால கட்டத்தில் மாத விடாய் ஒழுங்கற்றதாய் காணப்படுகிறது. 12 மாதங்கள் மாத விடாய் இல்லாமல் இருப்பதையே இறுதி மாதவிடாய் காலம் எனப்படும்<br><br>**நிகழ்வுகள்:-**<br>2001–ம் ஆண்டு மக்கள் தொகை கணக்கின்படி ஏறக்குறைய 160 மில்லியன் இந்தியர்களில் 50 வயதிற்கு மேற்பட்டவர்களில் 20 சதவீதம் பெண்கள் எலும்பு புரைநோயினால் பாதிக்கப்பட்டுள்ளனர். எலும்பு புரைநோயினால் பாதிக்கப்பட்டவர்கள் சுமார் 25 மில்லியன் இருக்கும | 5 epkplq;fs ; |  | |

| Fwpg;gpl;l nehf;fk; | cs;slf;fk; | fhyk; | fw;gpj;jy; fw;wy; bray;ghL | kjpg;gPL |
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| vYk;G Giu Nehapd; Mgj;j fhuzpfis gw;wp njupe;J nfhs;sy; | **எலும்பு புரைநோயின் வகைகள்**<br><br>**(1) எலும்பு புரைநோயின் முதற்கட்டம்**<br><br>எலும்பு புரைநோயின் முதற்கட்டமானது இறுதி மாதவிடாய்க்கு பிறகு அதிகமாக காணப்படுகிறது. இறுதி மாதவிடாய் காலத்தில் மெதுவாக குறைந்த ஈஸ்ட்ரஜன் உற்பத்தி செய்ய தொடங்குகிறது<br><br>**(2) எலும்பு புரைநோயின் இரண்டாவாது கட்டம்**<br>இந்த வகையான எலும்பு புரைநோய் அதிகமாக ஸ்டீராய்டு மாத்திரைகள் உட்கொள்வதனாலும் அளவுக்கதிகமான உடற்பயிற்ச்சி செய்வதன் மூலமும் மாதவிடாய் கோளாறு ஏற்படுவதனாலும் இரண்டாவது கட்ட எலும்பு புரைநோய் வரவாய்ப்புள்ளது<br><br>**ஆபத்து காரணிகள்**<br><br>1. குடும்ப வரலாறு | |  | vYk;G Giu Nehapd; Mgj;Jfhuzpfs; vit? |

| Fwpg;gpl;l nehf;fk; | cs;slf;fk; | fhyk; | fw;gpj;jy; fw;wy; bray;ghL | kjpg;gPL |
|---|---|---|---|---|
| | முதியவர்களுக்கு எலும்பு புரைநோய் தாக்கம் உண்டானால் அவர்களது தலைமுறைகளுக்கும் இந்த நோய் வரவ வாய்ப்புள்ளது<br><br>**2. வாழ்க்கை முறை**<br><br>புகைபிடித்தல் மது அருந்துதல் போன்ற பழக்கங்கள் மற்றும் ஆஸ்மா பொன்ற நோய்களுக்காக தொடற்சியாக ஸ்டீராய்டு போன்ற மருந்துகள் உட்கொள்வதனாலும் தைய்ராய்டு போன்ற நோய் உள்ளவர்களும் எலும்பு புரைநோயினால் தாக்கப்பட அதிக வாய்ப்புள்ளது.<br><br>**3. ஈஸ்ரோஜன் அளவுக்குறைதல்**<br><br>இறுதிமாதவிடாய் காலத்திரல் உடலில் ஈஸ்ட்றஜன் அளவுக்குறைவதால் எலும்புகள் வலுவிழந்து எலும்புபுரை நோய் வரவாய்ப்புள்ளது. | 7 epkplq;fs ; | | |

| Fwpg;gpl;l nehf;fk; | cs;slf;fk; | fhyk; | fw;gpj;jy; fw;wy; bray;ghL | kjpg;gPL |
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| vYk;Ggiu Nehapdhy; Vw;gLk; Fog;gq;fisg;gw;wp njupe;Jnfhs;Sjy;<br><br>vYk;Ggiu Nehia jLf;Fk; Kiwfisg;gw;wp mwpe;J nfhs;Sjy; | **4. உடற்பயிற்சி குறைதல்**<br><br>ஊடல் ரீதியான் செயலற்ற நிலையும் உடற்பயிற்சியின்மையும் எலும்புத்தாது அடத்தியை குறைப்பதனால் எலும்பு புரைநோய் தாக்க கூடிய அபாயம் உள்ளது.<br><br>**5. கால்சியத்தின் குறைப்பாடு**<br><br>வலுவான எலும்புகளுக்கு கால்சியம் மிகவும் தேவை ஒருநாளைக்கு பெண்களுக்கு 1500 mg to 2000 mg வரை கால்சியம் தேவைப்படுகிறது.<br><br>**அறிகுறிகள்**<br><br>• தொடற்சியான முதுகுவலி புறம் கூனல் உயரம் குறைதல்<br><br>**பின்விளைவுகள்** | 7 epkplq;fs; |  <br><br>  | vYk;G Giu Nehapdhy; Vw;gLk; ghjpg;Gfs; vd;d? |

| Fwpg;gpl;l nehf;fk; | cs;slf;fk; | fhyk; | fw;gpj;jy; fw;wy; bray;ghL | kjpg;gPL |
|---|---|---|---|---|
| | பலவீனம் அடைந்த எலும்புகள் எளிதில் உடைய வாய்ப்புள்ளது. சிறிய வேலைகளான எடைதூக்குதல் தும்முதல் கூட எலும்பு முறிவதற்கு காரணம் ஆகிறது, எலும்பு முறிவினால் அசைவாற்றல் குறையவும் ஆழமான சிரைகளில் இரத்தம் உறைவு ஏற்ப்பட காரணமாக அமைந்து கூடுதல் ஆபத்துகளை விளைவிக்கும். பின்கூனல் உட்புற உறுப்புகளில் ஏற்படுத்தும் அழுத்தத்தினால் ஒருவருடைய மூச்சுவிடும் ஆற்றலையும் பழுதாக்கலாம்<br><br>**கண்யுடறியும் முறைகள்**<br><br>எலும்புகளின் அடர்த்தியை அளவீடு செய்யும் முறைக்கு DEXA scan எனப்படும். இரத்த பரிசோதனைகள் CTscan போன்ற முறைகளிலும் எலும்பு புரைநோயை கண்டறியலாம்.<br><br>**சிகிச்சை முறைகள்**<br><br>எலும்பு புரைநோய்க்கு பலவிதமான சிகிச்சை முறைகள் உண்டு ஆனால் எலும்பு புரைநோய் வராமல் தடுப்பதே முக்கியமானதாகும் முந்தைய | 8 epkplq;fs; | | vYk;G Giu Nehia vt;thW jLf;fyhk;? |

| Fwpg;gpl;l nehf;fk; | cs;slf;fk; | fhyk; | fw;gpj;jy; fw;wy; bray;ghL | kjpg;gPL |
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| | மாதவிடாய் பெண்களுக்கு 1000 முதல் 1500 வரை கால்சியம் தேவைப்படுகிறது. நடுத்தர வயதினருக்கு 400 முதல் 1000 வரையும் வைட்டமின் டி தேவைப்படுகிறது. இது எலும்பு தாது அடர்த்தி குறைவானவர்களுக்கு 800 முதல் 2000 வரை வைட்டமின் டி தேவைப்படுகிறது. | | | |

## APPENDIX G

## EVALUATION TOOL CHECK LIST

Name of the expert :

Designation :

College :

Respected Madam / Sir,

Kindly go through the content and the place the right ( ) marks against the check list in the following columns ranking from relevant to non-relevant. Where ever there is a need for modification, kindly give your opinion in the remarks column.

**SECTION A**

**DEMOGRAPHIC VARIABLES**

| Item No. | Relevant | Needs Modification | Not Relevant | Remarks |
|---|---|---|---|---|
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**SECTION B**

**QUESTIONNAIRE**

| Item No. | Relevant | Needs Modification | Not Relevant | Remarks |
|---|---|---|---|---|

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**SECTION C**

**ATTITUDE SCALE**

| Item No. | Relevant | Needs Modification | Not Relevant | Remarks |
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